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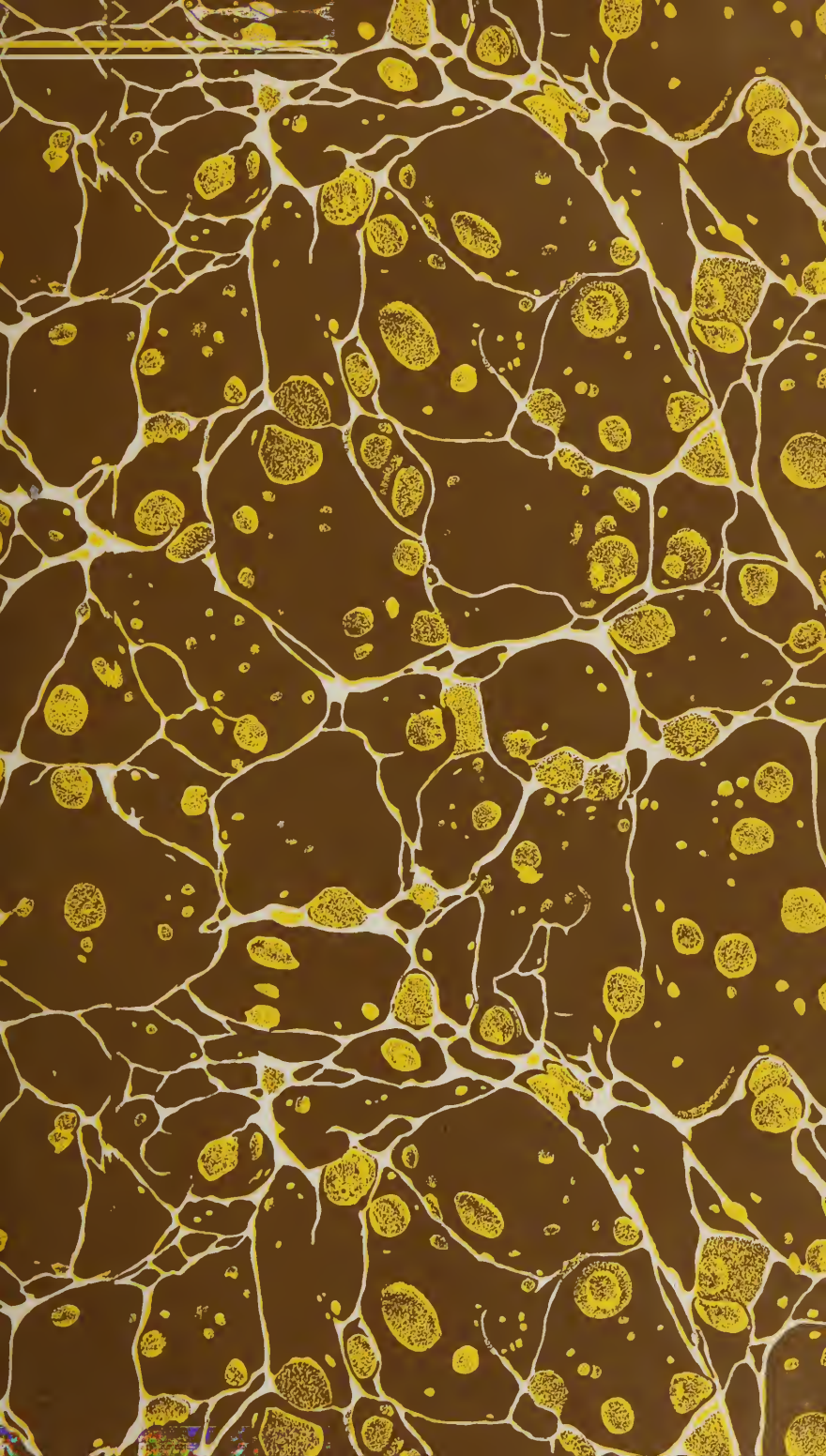
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*W. H. P. 1831*  
AN

EXPOSITION

OF THE PRINCIPLES OF THE

**NEW MEDICAL DOCTRINE,**

WITH AN ANALYSIS OF THE THESES SUSTAINED ON ITS DIFFERENT PARTS.

TRANSLATED FROM THE FRENCH

OF

**J. M. A. GOUPIL,**

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**BY JOSIAH C. NOTT, M. D.**

TO WHICH IS APPENDED

**A SHORT ESSAY ON LEECHES,**

BY THE TRANSLATOR.

*7763*

**COLUMBIA,**

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1831.

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1831

**TO SAMUEL JACKSON, M. D.**

I know no one to whom I can with as much propriety dedicate the following pages as to yourself—It was at your suggestion I perused the original, and it was from your lectures I received my first ideas of the doctrines it contained. You sir, were the first to raise the standard and fight the battles of Broussais in the United States; and with what zeal, talents and success, the profession has already decided. Your name will long be remembered as having most contributed to disseminate just principles of Pathology and Therapeutics in this country. I hope Sir, you will accept this as a tribute, however feeble, to your merit, and as the best acknowledgment I can now offer you for the many favors I have received at your hands.

I remain, dear Sir, with great respect and esteem,

Yours, &c.

**JOSIAH C. NOTT.**

*Columbia, June 8, 1831.*





## ERRATA.

- Page 2, Line 9, for *apercu*, read *apercus*.  
 “ 13, Caption of Chap. 2, read *Local phenomena of irritation*.  
 “ 21, Last line, read *systematic* for *sympathetic*.  
 “ 24, Six lines from the bottom, read *or* for *of the parenchyma*.  
 “ 31, Line 17, read, *by the pains*.  
 “ 38, Line 18, for *designated*, read *degenerated*.  
 “ 61, For *petechiæ*, read *petechiæ*.  
 “ 62, Line 17 from bottom, strike out *have*.  
 “ 77, Line 20, for *injudicious*, read *injurious*.  
 “ 87, Line 1, strike out “*takes place at the close of an articular inflammation, is like.*”  
 “ 88, Insert after the last line, “*supervenes on an articular inflammation, is like.*”  
 “ 96, For *marasmus*, read *Tabes mesenterica*.  
 “ 123, Line 7 from bottom, for *of*, read *if*.  
 “ 139, Line 3 from bottom, put the ( , ) comma after *it*.  
 “ 141, Line 11, for *then*, read *they*.  
 “ 151, Line 2 from bottom, for *prescribe*, read *proscribe*.  
 “ 162, Line 13, for *has*, read *have*.  
 “ 205, Line 16, read *Parenchymatous*.  
 “ 221, Line 12, read, *does not take place*.  
 “ 240, Line 3, read, *eight hours*.  
 “ 276, Line 1, read, *Pyrétologie*.  
 “ “ Line 7 from bottom, read *arrives* for *arises*.  
 “ 292, Line 10, for *causes*, read *cases*.  
 “ 319, Line 6, for *only the*, read *the only*.  
 “ 344, Line 9, for *proofs*, read *principles*.  
 “ “ Line 21, read, *is not traumatic*.



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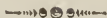
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## AUTHOR'S PREFACE.



When M. Broussais commenced promulgating his opinions, they were soon published and supported in theses, defended before the faculty of Medicine of Paris. These dissertations have not a little contributed to propagate a doctrine which is that of all physicians desirous of keeping pace with the march of science. Many amongst them have been sought for with eagerness, and contain many precious facts and discussions full of interest, which are not met with elsewhere. These theses being very rare, and most physicians not being able to consult the collections of the faculties, I have thought that it would be useful to present an analysis of them, as Robert did on a former occasion for the doctrine of the celebrated Bordeu; persuaded moreover, that we could not draw from a purer source for the purpose of exposing the principles of a doctrine which has gained to its author so just a celebrity, and to his works such great success. I have frequently consulted also other writings, and I have never neglected to support the principles which I have presented, with the very words of the creator of Physiological medicine—Instructed for a long time in his school, attached during two years to the hospital of the *Val de Grace*, I am certain of never having altered, as has been too often done, the opinions which he professes.



## TRANSLATOR'S PREFACE.



ALTHOUGH the name Broussais is familiar to every one, how few in the United States, particularly in the southern portion of them, know any thing of his history or of those doctrines which are now so deeply agitating the Medical Profession throughout civilized Europe. It is true that some of the works of his school have been translated into our language, yet none that I have met with exhibits his principles in a clear, concise, and forcible manner. The number and length of his own writings have hitherto deterred translators, which is to be regretted, as he is the most authentic and best expositor of his doctrines.\* I am happy to learn, however, that the *Examen* and *Phlegmasies chroniques* are preparing for the press.

Mr. Goupil's book, though inelegant and inaccurate in point of style, is the best elementary work of the Physiological School, especially for the younger members of the profession, that I am acquainted with; and will continue to hold its place, as M. Broussais has acknowledged its correctness. I have not been induced to give publicity to it from the belief that the system of M. Broussais is a perfect one. Like all medical reformers, he is enthusiastic, and his heated imagination has led him into the error, so common to genius, of generalizing too far. But I am persuaded that he is nearer right than any one who has preceded him, and that no physician can read his works attentively without becoming a better pathologist and a better practitioner. Nor indeed

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\* The works of Broussais are, 1, *Histoire des Phlegmasies ou Inflammations Chroniques*. 2, *Examen des Doctrines Medicales*. 3, *Traité de Physiologie*. 4, *De L'irritation et de la Folie*. 5, *Commentaire des Propositions de Pathologie*. 6, A great number of Articles in the *Annales de la Médecine Physiologique*, &c.

should any one be ashamed to admit this, unless he should be prejudiced enough to suppose that medical knowledge had arrived at perfection, and that experiment and the press could teach him nothing more. Even the antagonists of Broussais have acknowledged the light he has thrown on the maladies of the digestive canal, the inflammations of the white vessels, the identity of chronic and acute phlegmasiæ, the doctrine of sympathies, &c.

So fallacious is experience in our profession, that physicians may differ widely, and at the same time differ honestly. I have, however never yet met with one who has studied the works of M. Broussais, and tested his practice, who has not modified his own to a greater or less extent ; but I have met many too devoid of candour to acknowledge their obligations to him.

It has become very much the fashion with those too indolent or too much prejudiced to keep pace with the science of the day, to ridicule the French Physicians and their followers, as vain theorists, and inefficient practitioners who sit quietly with their arms folded and see their patients die for want of assistance. But I would ask these gentlemen from whence comes the greatest part of our recent discoveries in anatomy, physiology, pathology, chemistry, &c.? If they have watched at all the progress of science, they will at once answer, not from England or the English School, but from the *Continent* of Europe, and principally from France. Can it be then, that the men who have advanced the other branches of the science to such a height, should have so failed in therapeutics (the most important of all) as to be utterly unworthy of notice?—Nothing but ignorance and prejudice could originate such notions. Those who declaim most against Broussais, will be found to be those who know least of his books.

Not a few of the enemies of the Professor of the Val-de-Grâce, have attempted to show that his ideas are not original—

that they are to be traced to Baglivi, Bordeu, Prost, Bichat, Miller, &c. Yet, however, we may find insulated principles resembling his, who among his predecessors has elaborated and brought, a similar complete and connected system, into existence, and what is more important, put it into effectual operation? Indeed, the amount of the charge is, that Broussais is not the discoverer but the teacher of truth.

No man, perhaps, of any age ever possessed in a higher degree than M. Broussais, the qualifications necessary for a medical reformer. He is enthusiastically devoted to his profession, endowed with an intellect acknowledged by all to be of the first order, and his opportunities for observation have not been surpassed by any one of ancient or modern times. He was for six years in the navy, afterwards was attached to the grand army which he accompanied for nine years through France, Holland, Germany, Italy and Spain, and in 1814 was appointed Physician and Professor of an extensive hospital in Paris, (the Val-de-Grâce,) which station I believe he has held ever since—his private practice also has been very great. Thus he has been called on to treat every variety of disease, modified in every possible manner by diversity of climate, season, habit, and constitution. Under these various circumstances he has studied disease with untiring zeal at the bed side, watched it through all its grades and changes, and not satisfied even here, he has pursued its footsteps in the dead body, and advanced pathology to a degree of perfection hitherto unknown.

Such a man is at least worthy of a patient and candid hearing.





## OF IRRITATION IN GENERAL.

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### CHAPTER FIRST.

### PRELIMINARY CONSIDERATIONS.

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OF all the forms assumed by irritation, inflammation was the only one which fixed the attention of physicians previous to the origin of the physiological doctrine; and notwithstanding its frequency and the great number of investigations on this subject, all the modes in which it may exist, were still not known. Sole model of all the descriptions which they have given of it, phlegmon was the type of all the ideas they formed of the phlegmasiæ, and they mistook most of those not presenting characters as strongly marked as inflammation of the cellular tissue. The history of chronic phlegmasiæ had made still less progress: considered as affections entirely different from inflammations, they formed several classes of particular diseases, according to the diversity of forms which they assume, and the organic changes which they produce in the tissues. The numerous irritations of the white vessels were completely unknown, and the nature of the diseases of this system was involved in the most profound obscurity.

After having studied it under all its forms and in all the tissues, M. Broussais has created, if we may use the expression, the history of irritation, and the science, at the present day possesses a complete theory of it. The new facts acquired with regard to this element of the greater number of diseases, have changed almost entirely the face of pathology, and it will only be necessary for us to expose them, to shew the exactitude of this proposition.

We do not find in any thesis a general history of irritation written according to the spirit of the new medical doctrine ; but several of its modes have been treated particularly of in a considerable number of inaugural dissertations. M. Vialle has given us some general considerations on irritation which, notwithstanding all the interest they possess, cannot be well analysed, because he has embraced too great a number of subjects, on which he has presented us some valuable hints, (*aperçu*) and because he has treated not one of them particularly. We will, however, extract from his thesis a number of propositions to which we will add some developments, taken, for the most part, from the same source from whence he himself has drawn. Organized bodies, says M. Vialle, are animated by two forces named by physiologists *sensibility* and *motility*, to which they refer the origin of all the phenomena observed in these bodies. These expressions have the inconvenience of giving rise to conjectures on the nature of organic actions, whilst it is inaccessible to all our means of investigation ; we can perceive only the results of the modifications which organized matter experiences from the action of external agents ; and it is only by induction, it is only by carrying the idea of motion into the molecular action of the tissues, it has been established that it is by virtue of *sensibility* and *contractility*, they respond to the influence of modifying agents. M. Broussais has opposed the division of this property of the organized tissues, and for the purpose of establishing its unity, he observes that the sensibility of the fibre is only evinced by its contraction, and that it is only because it has contracted we judge that it has felt the contact of the agent which has produced its movement, consequently "to say that it is sensible, is to say that it has contracted." Admitting then, that sensibility enters into contractility, M. Broussais designates under this last name the cause of organic actions. We may call it also *excitability* or *irritability* after Gorter and Glisson, who first established the unity of the cause of these phenomena. Besides, M. Broussais does not regard the *vital properties* as the source of all the actions which take place in the organized tissues. They cannot, says he, explain assimilation ; which is, according to him, an act of *vital chemistry* (*chimie vivante* ; ) and whilst most physiologists attribute the phenomena of composition and decomposition of organized matter, to the action of vi-

tal properties ; he admits that another pre-existing power, and which according to him, is the *vital force*, puts in play vital chemistry, and gives to the organs whilst composing them, the faculty of responding to the action of external bodies.

Contractility, by virtue of which certain forms of organized matter execute appreciable movements, and which Bichat has separated from that presiding over nutrition, is according to M. Broussais, only the same property, the action of which is more extended, because it passes into tissues whose fibres enjoy in a higher degree the faculty of condensation ; they are those in which fibrine predominates.

With the greater number of physiologists of the present day, the Professor of the Val de Grâce does not regard *perceiving sensibility* or sensibility of *relation* as a special property, inherent in the organic tissues, like contractility; he refers it on the contrary, to a modification of the action of the latter ; he considers it as a function of the sensitive apparatus. In fact, if the nervous communications are interrupted between a painful part and the brain, or if the patient falls asleep, the pain does not exist, although the condition of the affected part remains the same. M. Broussais explains the perception of pain by the transmission to the brain of the exaltation of contractility, which is seated in the irritated part, and which is communicated to the sensitive centre through the medium of nerves. He furnishes proof of increase of the organic action of the brain in the perception of pain ; and resting on the facts just cited, and on many others which we might add, he considers sensibility as a functional result corresponding to an exaltation of contractility, but not inseparable from it ; for that which exists in an inflamed part, is transmitted to the brain during sleep, and there is no pain; and even whilst the patient is awake, it is neither continued nor constant, although the exaltation of organic action is transmitted to the sensitive centre with sufficient intensity to produce convulsions and other disturbances of its functions. This remark is of the greatest importance in pathological physiology ; it will enable those to conceive, who require the presence of pain to make them acknowledge the existence of an inflammation, that this sensation is only one of the sympathies of the irritated part, only one of the ways by which it manifests its suffering ; but we shall return shortly to this subject.

Two general forms of organised matter, the nerves and the vessels, penetrate into all the tissues, and seem to constitute their texture. "The vascular system to which I refer, says M. Vialle, the sanguine, exhaling, the absorbing vessels, the secretories, as well as the excretories, contain the fluids perceived by us in organized bodies; it gives to them the different movements which organization and life exact, and, for this effect it is endowed with sensibility and motility. The fluids play only a secondary and almost passive part in the organism; they are necessary to the exercise of the forces which they set to work, and whose action may be deranged by their nature, their quality, their quantity, and the obstacles met with in their course. They undergo continually various modifications and combinations by virtue of a vital affinity, whose laws are still far from being known to us; but the forces residing in the living solids are alone active; they constitute the essence of the vital phenomena; they alone are susceptible of affection, of diseases of which the patient can be conscious. We do not see nervous systems in vegetables, nor even in all classes of animals; but, as soon as it exists, this system interposes in all the acts of sensation and motion; it is the cause, the material condition at least, of the great sensations, in the same manner as the muscular system is of all the great movements, as soon as they begin to have a place in the series of animals. These two general or generating systems, the vascular and nervous, enter into the composition of all the organs, being differently modified in each one, and undergoing, equally, modifications in their property of feeling and moving; it is by means of them that the functions take place in each organ, and they become affected in all the derangements experienced by the functions, in all the diseases which are reduced, as far as we can see, to lesions of the sensibility and motion with which they are animated."

Excitability only manifests its existence when its action is solicited by the impression of excitants; life is only kept up by stimulants, Brown has said, and in this proposition he has proclaimed one of the most important and fruitful truths of physiology. Why is it, as M. Broussais observes, that the practical conclusions which he has drawn from this luminous idea, have made humanity pay so dear!

The influences which call irritability into exercise are of



two orders; the first proceed from the action of external bodies on the organs of sense and the mucous membranes. From hence the excitement is transmitted to other parts of the organism, by virtue of the sympathetic connexions uniting them to each other. The organs, the senses and the mucous membranes are then the first points of stimulation, the movers of sympathy, according to the expression of the author of the *Examen*; it is from the excitement which they receive and from that which they spread through other parts that result all the acts of the organism.

Excitability is not disseminated uniformly through the organs: some of them are endowed with a greater quantity than others. Thus the skin is more irritable than the cellular tissue, and less so than the mucous membranes; and on the other hand, we must remark that stimulating agents never act on the whole economy at once, that their action is even most frequently limited to a part of little extent, and that from hence it is transmitted to other points. If the excitability is greater or less in the different tissues, and if all are not equally submitted to the influence of stimulants, it must necessarily result from this, that excitement cannot be uniform in the economy; that it must predominate in one part, whilst it is less in one or several others, and *vice versa*; this is the reason why strength and weakness are never general, but co-exist ordinarily in the same individual; why there are no general diseases; why one system or one apparatus languishes, whilst another is disorganized by an inflammation. Brown then commits a capital error, when, considering the economy as a whole, he asserted that *excitement* was identical, *one*, and *indivisible*, in the organism; that it could not be diminished in one point if it was increased in another. This hypothesis, as arbitrary as it is absurd, contradictory to reasoning and to all the results of observation, was, however, as we know, the principle basis of his deplorable reform.

The sum of excitability distributed to the different organic systems, does not vary only according to individuals, it undergoes also a number of modifications from age and the influences exercised by climate, seasons and regimen; we also see the vital activity predominate successively in several apparatuses. During the first years of life, this preponderance is observed in the brain and the digestive passages; during youth and the commencement of adult age, in the

organs of respiration and generation: in manhood the abdominal viscera predominate; finally, during old age cerebral irritability becomes preponderant. We remark also that cold augments the excitability of the organs of respiration and diminishes that of the digestive apparatus, that heat produces opposite effects, &c.

Excitability being the source of the phenomena of life, the functions of the organs which possess most of it must possess greater energy than those of the others. These preponderances are general or partial; they constitute *temperaments* when they exist in the generating systems (the nervous and vascular,) and idiosyncracies when they show themselves only in an organ or an apparatus. It is these which determine, in the greater number of cases, the seat and character of irritations. In truth, organic activity, already predominant in one part, may easily be increased by the stimulating influences to which it is directly submitted, and by those transmitted to it sympathetically; that is to say, that the organs whose action is more energetic than that of the others are most exposed to lesions depending on an increase of excitement; and these are the most numerous. If, then, several organs are submitted to the action of a stimulating influence, the one whose greater vitality constitutes a partial predominance, will contract an irritation and this will manifest itself by the phenomena of nervous, sanguine, or lymphatic irritation, according to the system constituting the general predominance. From whence we must conclude that the more a part is excited, the more susceptible it is of receiving an increase of excitement. This general principle, so remarkable in the new doctrine, must be considered as a law of pathological physiology, so multiplied are the facts from whence it is deduced. Let us observe also, that a powerful stimulating agent may develop an irritation in a languishing part; but it is absurd to pretend, as is done, that the most feeble organs are most frequently diseased. This error arises from considering the organisms *en masse*, instead of studying separately the action of the different systems and apparatuses. If the weakness of an organ predisposes it to diseases, it can only be to those which depend on too feeble an excitement, but, these are incomparably more rare than those presenting an opposite character.

The too powerful action of stimulating modifiers (*modificateurs*) carries excitement to a degree superior to that proper for the maintenance of health; this superexcitation



brings on constantly, in the part experiencing it, a more considerable afflux of *fluids*, which produces a morbid congestion. This state is that called *irritation* by M. Broussais. When, on the contrary, excitement is too feebly solicited, its action languishes; this constitutes *debility*.

From this augmentation and this diminution of excitement, in one or several organs, results irregularity of the functions, that is to say, a morbid state.

After these considerations, on several of which the thesis of M. Vialle has served as a text, an important question, neglected by this physician, presents itself. Are increase and diminution of excitement the only modifications which it is susceptible of undergoing; are all diseases produced by excess of action in the organs or by their debility; in a word, can excitation undergo specific modifications? M. Broussais himself proposes the question, but does not answer it; he has, however, sufficiently explained himself on this subject for us to conclude that, if he admits any thing specific in certain diseases, it is only in the mode of action of their causes. "In giving, says the professor, the name of specific to the causes producing always local affections of the same aspect, I am nevertheless of opinion that they can only do it through the medium of the same vital laws which preside over all the diseases of irritation."

However restricted may be the admission of specific affections considered in this point of view, it has appeared inconsistent with the new medical doctrine, and doctor Boisseau, in his controversies with its author, reproaches him for not having entirely rejected every thing specific (*la specificacile*.) But the answer of M. Broussais seems to us to justify completely his opinion in this respect. He observes indeed that we cannot confound a morbid cause, which, in all individuals to whom it is transmitted, produces an irritation identical in its characters, in its march, &c. (such are small pox and vaccine,) with other irritating modifiers, whose effects, always subordinate to individual sensibility, to the intensity of their action, &c. present the most numerous modifications. Besides, as he further remarks, the impossibility of appreciating the mode of action of *specific agents* not preventing us from knowing the results of their influence, from seeing, for example, that *syphilis* consists in a series of phenomena of irritation, we should be silent on that which is not susceptible of being demonstrated either by the senses or by induction.

Let us now examine how modifiers act in the production of irritations and the influence which the state of the forces exercise on the results of their action.

*Superexcitation* of the tissues, and the congestion which it determines, is produced by a number of causes referable to four general orders: 1st, the too energetic action of stimulants directly applied to them. 2d, The sympathetic influence which they receive from an organ too highly excited. 3d, The withdrawing for too long a time their habitual stimulants, as proves gastritis produced by hunger. 4th, Finally, the diminution of excitement in one or several parts; but this last proposition requires some developments.

In the same manner as exaltation of vital action is established in one part at the expense of one or several organs, its diminution also operates to the profit of another; for the action of each one is counterbalanced, if we may use the expression, and the rupture of this equilibrium has always as a cause or effect, irritation of some part or other. On the other hand, there are organs whose sympathetic relations are such, as we shall see by and by, that their functions bear to each other in energy an inverse relation; such are the mucous membrane of the large intestine and the skin, this latter membrane and the air passages. If then humid cold exercises a debilitating action on the skin, the two other membranes which we have cited will receive an increase of activity in order to supply the diminution of the cutaneous action, and this exaltation may be carried to the degree of disease. Finally, the influence of a debilitating agent on a part may be followed by irritation in this same part; it is thus that the action of cold, one of the most powerful sedatives, is soon followed by reaction; that is to say, by exaltation of the organic action of the part which has been submitted to this impression, provided the latter has not been pushed so far as to extinguish its irritability.

This truly physiological method, the only one which we can apply to etiology, has without doubt been the principal source of the important discoveries of M. Broussais; it shews to us all the falsity of the opinions admitted with regard to general stimulants and debilitants, and that of the principles deduced from them in the theory and treatment of diseases; this error is also attributable to the same cause that we have already pointed out: ignorance of the diver-

sity of the phenomena of vitality in the different organs, and of the influences which they exercise on each other, joined also to the ideas of the Scotch reformer on the unity and indivisibility of the action of the organs ; ideas introduced into most modern theories, notwithstanding the beautiful discoveries of the *Anatomie generale*.

There does not exist then, modifiers absolutely stimulants or debilitants ; those increasing excitement in one part, diminish it in another, and *vice versa*. Thus, sad moral impressions, nostalgia for example, plunge the locomotory functions into a state of languor, and produce inflammation of the digestive mucous membrane ; cold renders the skin pallid, diminishes its action, and produces at the same time, a pleurisy or pneumonia ; alcoholics in excess inflame the stomach and throw the muscles into a state of debility. It is evident then, that we cannot class such an influence among stimulants, and such another among debilitants. There does not exist general stimulating or debilitating influences ; for if it was so, they would necessarily act on all the organs at once, and this is impossible.

Whatever be the state of general vitality, the effects of the action of stimulants on a part are always the same ; in other words, irritation may be established in strong individuals as well as in weak, and a state of the greatest debility may coincide with the highest degree of irritation. In a word, since the different parts of the organism are never modified in the same manner ; since there exists neither general nor uniform diminutions or exaltations of the action of organs ; since the debilitation of one of them is, under many circumstances a cause of irritation to the others ; it is easy to conceive that the most violent irritation of one or several parts may co-exist with weakness of others. M. Broussais remarks that where the forces exhaust themselves on the interior, there takes place in the organs which play the most important part in the economy, a concentration of vital action, and as a consequence a congestion of fluids. It is, according to his opinion, by virtue of this law, that we may explain how the brain, spinal marrow and lungs preserve their whole volume in the middle of an attenuated body.—“Irritations take place more easily, says M. Vialle, if debilitated individuals are acted on by irritating causes ; for it has always been observed that the equilibrium of the functions is more easily broken, and that its concentrations are

more frequent, when the sum total of the forces is less.<sup>55</sup>— It has also been observed, that feeble individuals are more subject to visceral inflammations, and that in them these inflammations ordinarily become very serious. Indeed, debility being never general, affecting only certain parts, others are left in a state of relative superexcitation which predisposes them to inflammations; besides, the sympathetic irradiations produced by them, cannot create reactions in the debilitated organs which receive them, and the concentration of forces in the diseased point not being counterbalanced by the action of the others, augments incessantly; the equilibrium cannot then be established.

Many practitioners have observed that a small bleeding, far from diminishing the intensity of a pneumonia, only serves in general to exasperate it. Sanguine emissions do not in fact, produce any amelioration except when they are copious and so rapid as to produce an immediate effect on the capillary circulation of the inflamed viscus.

M. Broussais explains after the same manner the irritation of the sensitive apparatus manifested by convulsions which we observe in large sanguine deperditions, in death from hemorrhage. The activity of the nervous system is always in an inverse proportion to that of the sanguine and muscular systems; to weaken the latter is to increase the former. This assertion is based on too great a number of facts of physiology and pathology, to require any farther explanations.

From all that precedes, it follows then evidently that under the influence of debilitating causes, debility is far from being uniform, that irritation may co-exist with it, and that even in certain cases the latter is the result of debilitation.

Irritation of one organ brings on always diminution of the action of some other, and this phenomenon is more marked in proportion, as that of the first is greater. When it exists in the viscera, it is principally the muscular system that experiences this debility which we see carried to the last degree in gastro enteritis of the highest grade. The Brunonians, who only appreciated the forces by external appearances, judged of the state of all the organs by that in which they found the muscles, and did not consequently allow the inflammatory character except to lesions, accompanied with coloration of the face, force of pulse and energy



of the muscular system, and ranged under *asthenia* all those joined to an opposite exterior. This error has insinuated itself into the theories of other schools; external debility has fixed all their attention in the visceral inflammations which produce it, and attributing to it the fatal results produced by the latter, they have made debility a disease and have addressed to it their curative means.

Whatever be the extent of the parts whose action appears increased, the irritation always commences in a point. It is only secondarily that it is transmitted to others, and all of the tissues are never irritated at the same time. It is impossible indeed, that excitants can have an action general and every where uniform, that they can stimulate all the organs in the same degree; and whatever extension we may suppose to their action, it will always happen that the most important organs, those which are most sensible, will be irritated in a higher degree than the others. Let us take an example: suppose an inflammation of the whole mucous membrane of the digestive passages which gives rise to a sympathetic irritation of the heart, of the brain and skin, the heat of which shall be increased, throughout its whole extent, and one region shall even be affected with *erysipelas*; suppose also that there be joined to these lesions an inflammation of the mucous membrane of the lungs and bladder, a *hepatitis* and a *peritonitis*; here certainly is the most serious assemblage of lesions which we can meet with; and yet how many tissues are not affected. The febrile state is often cited as an example of general disease; but we should carefully distinguish the phenomena of disease from the lesion which produces them; and as M. Broussais remarks, if in *fever* we observe a greater activity of the circulation, and a more considerable heat in all the tissues, it does not follow from this that the cause of this exaltation of action exists in all parts and that the disease is general; its seat is often very limited, and no one will consider as a general disease, the febrile state often produced by a *paronychia*, an *angina*, an *erysipelas*, &c.

The direct or sympathetic impressions of stimulants are at first felt by the nerves; they are first irritated; and as long as the irritation is limited to their tissue, no other phenomena are manifested in the part than the exaltation of sensibility. It is possible for the irritation to concentrate itself in the nervous capillaries; for these to continue to be affected

without the vessels being moved. We observe then, the morbid phenomena which constitute the *neuroses*; but almost always the irritation is transmitted to the sanguine capillary vessels, and it there presents itself under two different forms.

1st. The irritation calls the blood there, the circulation becomes more rapid and a larger quantity of this fluid traverses them; it at the same time penetrates into the white vessels, and from these organic changes results redness, augmentation of heat, pain and tumefaction of the part, if its structure is of a nature to admit of it. These phenomena constitute *inflammation*. We designate by this word the sanguine capillaries affected by irritation. Inflammation then is only an assemblage of morbid phenomena, of which *irritation* is the element, the generating cause.

2d. At the same time that the vessels are irritated, they sometimes have a particular disposition to open themselves and give passage to the blood flowing into them; this is the *hemorrhagic irritation*.

3d. The phenomena of irritation are often confined to the white vessels; the afflux of white fluids which it determines there, and the tumefaction resulting from it, are the only changes which take place in the part; there exists here neither pain, heat, nor redness. M. Broussais has designated this state of the irritated tissues under the name of *sub-inflammation*. It is to him that we owe the knowledge of this numerous class of disorders known under the names of engorgements, scirrhus, tubercles, &c.

4th. When the phenomena of irritation exist principally in the nervous capillaries, we have said that they constitute the *neuroses*. "This system is never affected singly, says M. Vialle; whether the irritation be seated in its expansions which are interwoven with the sanguine and lymphatic vessels, or whether it reside in its centre or cords, which are nourished only by means of these vessels, the latter necessarily participate in it. This is proved by the alterations of structure and disorganizations that supervene in the parts where the *neuroses* remain for a long time fixed. It is then only one step from these diseases to inflammations: their causes and their *post mortem* appearances are analogous; and they differ only in this, that, in the *neuroses*, the phenomena are more nervous, where as they are more vascular in inflammatory diseases than in the former case.—



These phenomena consist rather in simple lesions of sensation and motion, whilst these same lesions determined in the sanguine or lymphatic capillaries are followed more promptly by alteration of the composition of the fluids and disorganization. We should be careful not to make the symptoms which these diseases present, *abstract beings*, and not to treat them as simple *errors of perception*, it is necessary to materialize them in some sort more than has been done heretofore, if we wish to form a clear idea of them, and to arrive at the correct method of treatment."

These distinctions of the different modes of irritation would pass for subtilties, if we thought that the author of the *Examen* isolates from each other, the affections of the capillary divisions of the nerves and vessels. But this is not the case; when M. Broussais says that inflammation is the irritation of the sanguine capillary vessels, he only means that the irritation predominates in the red capillaries, and at the same time affects the white vessels and nerves.— But as, in other cases, the lymphatic and nervous capillaries appear to be alone irritated, as there is no afflux and accumulation of red fluids, he has thought proper to distinguish the different states of the irritated tissues, the more especially as in each of these forms, the local and general results of irritation present, and its treatment likewise, the most marked differences.

Let us first study with all the details which the subject requires, the local phenomena of irritations, we will then present some general considerations on the influence exercised by them on the economy.

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## CHAPTER II.

### PHENOMENA OF IRRITATION.

M. Duponchel who has given us a thesis on inflammation, in which he has exposed with fidelity the text of the lessons of M. Broussais on this subject, says, with other authors, that it is characterized by pain, redness, heat and tumefaction. Wishing then to appreciate the degree of confidence which these phenomena deserve, as signs of inflammation, he observes that these symptoms are not always apparent; frequently they are not all present and sometimes none of them are sensible. But because all these signs are not evident, we should not on this account conclude that inflammation does not exist. If the inflamed organ is situated in-

ternally, the tumefaction, redness and heat will not be perceivable. But the pain it may be said always exists, to enlighten the practitioner ; and when it does not exist, there is no inflammation. This objection is not well founded ; if the disease is very extensive, if the organ has relations sufficiently intimate with the rest of the economy, to determine numerous sympathetic symptoms, if the encephalon becomes affected, whether essentially or consecutively the pain will not be perceived by the patient and there will nevertheless be inflammation. In these three cases the sympathies alone can guide the practitioner ; it is because some nosologists have always had phlegmon before their eyes and have thought that they must constantly meet these four signs in all inflammatory affections, that they have so far limited the number of them."

This important subject demands farther development ; let us attempt to fill the void which the author of the thesis has left on this point. A proposition much too general has been laid down in saying that the phenomena pointed out above, constitute the characters of the inflammatory state ; for the latter would often pass without being recognized, if we were to persist in searching for these phenomena to establish its existence. In fact, pain far from being inseparable from inflammation, as is asserted, M. Broussais has observed, does not exist in many of the most intense character. It is not manifested generally, except in inflamed tissues, submitted at the same time to compression ; thus arachnitis, pleurisy, peritonitis, are accompanied with acute pains, which are very rare in inflammation of the mucous membranes. We have seen farther back that sensibility of relation was only a function of the nervous system, corresponding to an exaltation of contractility determined in a point by stimulants, and transmitted to the brain by the nerves, and that this functional result was not inseparable from super-excitement ; the absence of pain then cannot, in any case, permit us to deny the existence of inflammation ; we ought consequently to seek other signs to establish it, since in a great number of cases this does not exist. Besides it may lead us into error with regard to the seat of inflammation, or at least with regard to the principal source of the symptoms observed by us ; for inflammations produce sympathetic irritations in other parts ; and these in their turn provoke new sympathies, which transmit to the brain an

exaltation of the contractility of the part they effect as well as the primitive affection. We refer our sensations to the point where the impression has been produced by stimulants, because the brain, after this has been transmitted to it, sends back the former by the same nerves, to the point from whence the impression departed ; and it often happens when several irritated organs transmit at the same time to the brain, the increased excitement seated in them, that the painful sensation is referred to one and not to others.— Thus, as M. Broussais first observed, it happens that the parts sympathetically irritated, are often more painful than those which are the seat of the primitive inflammation. In gastritis, for example, the patient often experiences pains in the articulations, and none in the stomach ; hepatitis produces severe pain in the right shoulder, whilst the region of the liver is free from pain, &c. this is the reason why, when the viscera are irritated to a great extent and several at the same time, the patient cannot determine the precise seat of the pain, which then takes the names of *uneasiness*, *anguish*, *anxiety*, &c.

Pain being the result of sympathy exercised on the brain, it is evident that the most painful inflammations are those which excite the greatest trouble in the functions of relation ; but those not accompanied by any pain, may, according to what we have seen above, produce the same disorders. Thus inflammation of the stomach and of the small intestine though rarely painful, produce often delirium, convulsions, &c.

The increased afflux of blood into the inflamed part and its passage into the white vessels, determine a redness in these more or less vivid, continuing until the cessation of irritation in the sanguine capillaries. Let us examine the degree of certainty which this phenomenon possesses, as a sign of inflammation when observed after death. It has been pretended that the redness met with in the dead bodies of individuals who have sunk under diseases not acknowledged by all to be inflammatory, may be the result of atony of the vessels of the tissue in which it exists. But parts affected for a length of time with paralysis, the capillary action of which is weaker since these parts become atrophied, show during life and after death a manifest want of color. When we submit a part of the skin to the sedative influence of a refrigerant, it becomes pale, and its color does not reappear until the action of the capillaries has re-

covered its energy. Atony of the tissues then, far from permitting an accumulation of blood in them, diminishes on the contrary the afflux of this fluid. It has again been pretended that the redness and sanguine engorgement produced by inflammation, may be the result of an infiltration after death; but this phenomenon does not take place, as we know, except in the portions of the skin, of the cellular tissue, and of some other organs which occupy the most dependant position, whilst the body is becoming cold; the tissue thus infiltrated may be brought back to its normal condition by macerating it for some time in water, and it is necessary to remark that in cases where the inflammation was light or existed only for a short time, we may by the same procedure make the redness and engorgement disappear likewise. From all these facts, it is right to conclude, that except the cases in which it is a *post mortem* phenomenon, and it is always easy to recognize these, redness declares the existence of inflammation. But if we may draw this conclusion from the redness of the tissues, its absence does not authorize us to deny the existence of inflammation, where we have established the symptoms of it during life. Morgagni, Bichat and other anatomists, whose assertions merit all our confidence, have observed in the membranes and in the viscera, inflammations which have not left in the dead body any trace of phlogosis or engorgement. "We cannot," says the author of the *Anatomie générale*, "form an idea of the quantity of blood which penetrates the peritoneum or pleura when inflamed, by that observed twenty four hours after death; the local irritation was a permanent cause which fixed the blood in the part; this cause having ceased, it escapes. A serous membrane may have been highly inflamed during life and present very nearly its natural aspect after death. I have often been tempted, after the opening of dead bodies, to pronounce the non-existence of an inflammation which had been present. The same remark applies to the cellular tissue, to inflamed mucous surfaces, &c. Examine a subject after death, from an angina which, during life, had given a deep red color to the *velum palati* and parts around it; what is the result? after death the parts have again assumed their natural color."

Dr. Bégin assures us that often the corrosive poisons destroy subjects before the slightest inflammation is developed. "*Post mortem* examinations," he adds, "made by a



physician worthy of credit, a few instants after death, have shewn that at the termination of fevers, the mucous membrane of the digestive organs, which we ordinarily see only partially phlogosed, is of a red color over its whole surface; and that the inflammations thought to be light twenty four hours after death, have been found excessively violent in subjects just dead."

M. Jeunesse relates the results of experiments made on living animals, which also go to confirm these assertions.— "I have opened says he; several guinea pigs, and by irritating the peritoneum, I have caused an afflux of blood to it and produced inflammation; the redness being intense, the heat having manifestly augmented, in short all the characters of active inflammation being developed, I killed the animals, taking care not to produce hemorrhage, and saw to my satisfaction, the peritoneum become blanched and re-established in the conditions natural to it. We see then after this that it is possible not to find any apparent lesion after death from acute peritonitis; this in fact, is often the case."

It is principally when inflammations have terminated by death, after a very short duration, that the organs in which they were seated, are presented in their natural condition, and particularly when they are examined a long time after death. It is to cases of this kind that we must refer the examples cited by the partisans of *essential fevers*, who assure us that they have not found in certain cases any trace of inflammation in the alimentary canal; for whenever a given series of symptoms corresponding to the inflammation of any organ presents itself, we must acknowledge the existence of the latter, or throw aside every thing given us by induction.

Considering the limited extent of the disorders often met after inflammations whose course has been rapid, certain physicians refuse to admit that an affection in appearance so light can produce such grave consequences; but one must be an entire stranger to pathological physiology, if he does not know that there are few organs whose lesions produce necessarily and alone, death. It is only violent affections of the heart, large vessels, lungs and brain, which lead to this result, because the respective functions of these organs cannot be suspended or abolished without producing death. In all other cases, local disorders do not produce this dreadful consequence, but in a mediate, secondary manner, and by

the sympathetic influence reflected to the heart or brain. Thus, it is not the inflammation of the stomach or of a portion of the small intestine alone which kills the patient, but he falls a victim to the disorder of the nervous and circulatory functions, provoked sympathetically by the gastro-intestinal inflammation. Why may we not conceive that, from the moment when an irritation becomes sufficiently intense to arouse sympathies which are reflected on important organs, it may in this way produce the most serious accidents, and rapidly bring on the death of the patient? But we will see that the development and intensity of the sympathies, are subordinate not only to the gravity of the inflammation, but to several other circumstances and particularly to individual sensibility, and the importance of the affected organ; moreover, we have just seen that as soon as irritation is established, important sympathies are often put in play, before the character of the inflammation is made manifest: we can then easily account for the death of the patient, notwithstanding the lightness of the local lesion, especially when we have been able to observe the symptoms of the affection to which he has succumbed.

Let us now examine the changes which the inflammatory state undergoes when established. "Inflammations, if they do not cease spontaneously or by the aid of art, says M. Vialle, follow, necessarily, a longer or shorter course, but always variable according to the constitution of individuals, and particularly in proportion as the individuals are more or less stimulated; in terminating, they do not give a preference to the seventh, fourteenth, twenty-first days over any other, notwithstanding the order given to them by the calculators of septenaries, or those who have personified diseases, and considered them independent of the organs and stimulants acting on them. They terminate in several ways: 1st, they abort spontaneously or by means of art; we then often observe a crisis or metastasis, which indicates always the transportation of the irritation from one part to another; and the secondary phenomena consist either in the brisk re-establishment of secretions more or less suspended, or in a hemorrhage, or in the sudden appearance of an inflammation advantageous or mortal according to its seat: 2d, they may produce fatal congestions when seated in important organs; sometimes they terminate by red induration, which becomes chronic.



if the organ is of little importance or if life can continue without its participation—then necessarily interrupted; 3d, they may determine exhaustion and death, whether we consider them in the acute or chronic state; 4th, they terminate by gangrene or local death, followed or not by general death, according to the importance of the organ affected, according as the gangrene progresses or is arrested by a new inflammation and according as the effects of the miasms resulting from the putrefaction are more or less grave; 5th, finally inflammations may terminate by resolution or suppuration, which suppose always a passage of the irritation to the white vessels, and an alteration of the fluid constituting pus. Resolution and suppuration only differ from one another in this, that in the first, irritation diminishes gradually, the pus is absorbed or eliminated by way of the excretions: this is the insensible solution or *lysis* of the old authors. In suppuration, on the contrary, the irritation is kept up; the pus cannot be absorbed, it forms collections, cysts, infiltrations, or a continual excretion without. Suppuration then is a continuation of the disease which may still, in this case, 1st, terminate after a longer or shorter time, by resolution, that is to say, the cessation of the irritation producing the pus, and its absorption, if it forms a collection: 2d, operate the destruction of organs and produce death, if they are important, or only disturb their functions by the compression occasioned by the collections; but these produce, ordinarily in the long run, irritations and fatal disorganizations, if they are internal, and effects more or less grave if they are in the members and external parts; 3d, occasion hectic fever and death by the irritations which an altered and fetid pus carries into the principal viscera—qualities easily assumed by it when in contact with the air.

“Of these different terminations of inflammations, there are only suppuration and red induration which can exist in a chronic state, and which tend thus to confound themselves with sub-inflammations.”

Let us add some illustrations to what M. Vialle has just said on the terminations of inflammation. Its phenomena disappear gradually (resolution,) or rapidly (delitescence) under the influence of several causes differing in their nature: 1st, when the cause of the malady has ceased to act before this had arrived at a high degree of intensity; 2d, when we submit the inflamed part to the action of astrin-

gent substances or to the action of sedatives, such as cold and opium; 3d, when the inflamed organ has provoked in another part a sympathetic irritation, which has become superior to the original one; 4th, when before the appearance of the inflammation, there already existed one more intense, in another organ, or which has acquired a greater intensity from the sympathies provoked by the secondary irritation; because the latter is always reflected on irritated parts; 5th, finally, when we establish in one part, a more powerful irritation than the one which existed in another point.

Different circumstances may produce gangrene in the inflamed part: an excess of inflammation which seems to exhaust the excitability by the too violent exaltation it undergoes; the compression, the strangulation of inflamed parts, which not permitting their tissues to be distended by the fluids flowing into them, and which brings on their disorganization; finally the influence of certain deleterious principles, such as those productive of the malignant pustule, the carbuncle and pestilential buboes. Authors have attributed to these agents the property of destroying life in the parts on which they act, and they have admitted moreover with Brown that they exercised on the whole economy an influence eminently debilitating, that plunged it into a state of asthenia, without taking notice of the concomitant phenomena of the local affection. Although admitting a disposition to gangrene in the parts on which the deleterious agents exercise their influence, M. Broussais remarks that the latter commence by producing an irritation, and at the same time that the gangrene is taking place, we see very often a violent reaction supervene in the surrounding parts and oftener still the viscera become inflamed; and then, according to the degree of their irritation, we observe the symptoms of inflammatory or adynamic fever. From whence we have a right to conclude that these deleterious principles, notwithstanding their tendency to destroy life in the parts acted on by them, are no less, on this account, irritants; that they only produce death in a circumscribed point, while other parts are almost always inflamed; that consequently, the modifications introduced by them into the organism cannot be the result of asthenia.

Suppuration appears to be the end of inflammation; at least the formation of pus is, in the majority of cases, the termination of the inflammatory state: we see then the local phe-

phenomena and sympathies which it produces disappear, especially when the pus is formed by an organ communicating externally; but when it is collected in an abscess it keeps up ordinarily the irritation of the tissues in contact with it, and thus perpetuates the consequences. Besides, the modifications undergone by the secretion and the nature of this fluid being subordinate to the disposition of the organs, can only be considered in the history of the inflammation of each one of them. We possess, on the sub-inflammations, several well written papers, in which we find the doctrine of Broussais on organic diseases: but before passing on to their examination, we will present several general considerations on the chronic state of inflammations.

When inflammation does not terminate by resolution, and gangrene or death does not supervene, to interrupt its course, it passes into the chronic state. In fact, when the causes under whose influence irritation has taken place, do not cease to exercise their action, these phenomena continue, but they soon undergo remarkable modifications, the exact knowledge of which is of the highest importance. The sympathies called into play by the diseased organ often disappear; at other times they continue, but lose a part of their intensity; the local phenomena of inflammation also become more obscure, and often even when it effects an internal organ, is only appreciable by the disorder of its functions: before the splendid researches of the historian of chronic inflammations, these affections were almost always misunderstood; the alterations produced by them were considered as particular diseases. No relation had been established between these and acute irritations, or if there was perceived between the two a resemblance of cause, they did not continue the less separated by a brazen wall. If a pulmonary catarrh or a pneumonia was followed by symptoms of chronic pneumonia, physicians saw nothing but *tuberculous degeneration*. Chronic hepatitis, peritonitis, and gastro-enteritis, were *obstructions*, *dropsies*, *nervous affections*; moreover, if the febrile state which the inflammation excited in its acute stage, continued chronic, they no longer saw fever symptomatic of inflammations, but *hectic fever*, the companion of *organic lesions*. If we consider that this ontology, in producing misconceptions of the nature of these affections, has diverted physicians from the treatment proper for them, since symptomatic ideas have more fre-

quently been the base of their practice than empiricism, we may easily conceive how eminent is the service rendered to medicine by M. Broussais, when he connected together chronic and acute inflammations and when he demonstrated their identity.

A number of facts present themselves to support this notion ; let us confine ourselves to the following proofs, they are indisputable : 1st, chronic irritations are produced by the same causes which produce acute irritations ; 2d, they are most frequently the consequence of the latter ; 3d, except in intensity, their local effects are the same, they always consist in the exaggeration of the phenomena by which life are manifested ; 4th, they are extended like acute irritations, to neighboring and distant organs by means of sympathy ; 5th, the treatment of the chronic is the same as that of the former, except that it is in general less active and should be continued for a longer time.

We should here remark that the low degree of intensity in the local and general phenomena of irritation exists often from its very commencement, on account of the weakness of the stimulating action or from the want of vitality in the affected part. We must then admit *primitive chronic* inflammations. We acknowledge that to be rigorous in our expressions, we should only employ the epithet *chronic* on irritations which have existed under the acute form ; but the science would lose by this exactitude in language, for to give a different name to this state of inflammation, would be in some sort to distinguish it from that succeeding acute inflammations ; whereas they are identical. It is better then, with Broussais, to give the name of *chronic* to all irritations, of which obscurity and a slow march form the principal characters, whether it exist primitively or consecutively.

However this may be, the organ which is the seat of chronic inflammation undergoes different changes according to its structure, the degree and duration of the irritation. In the tissues, rich in sanguine capillaries and cellular tissue, we see the inflammatory tumour continue and acquire a greater density ; such are the hepatization of the lungs, the callosities of the skin and of the subjacent cellular tissue, the thickenings of the mucous membranes and those of the peritoneum, &c. This condition, which M. Broussais designates under the name of *red induration*, may continue indefinitely, unless it exists in an organ, the disturbance of



whose function interferes with nutrition; in this case it brings on the destruction of the patient. In other cases, after having existed for some time, the red induration is replaced by white induration. In place of producing these alterations, inflammation sometimes keeps up in the tissues a chronic suppuration, which is also often accompanied by their induration.

When chronic inflammation continues for some time, we see the heat and redness disappear. The blood no longer penetrates into the capillaries of the diseased part; the white vessels then become the only seat of irritation, and the diseased tissue is transformed into a homogeneous, indolent white mass, in which are developed new tissues, melanosis, tubercles, scirrhus, &c. After a longer or shorter time, these formations become softened, liquify, inflame the parts in which they are developed and produce ulceration.

The lesions designated under the name of organic diseases, are not then primitive, are not particular disorders, but are the result of another affection, of which physicians have described the last stage separately, just as in presenting the picture of adynamic fever, they have traced, as M. Broussais observes, the last scene of gastro-enteritis. It will be easy for us to show the truth of this proposition, by supporting it with a crowd of proofs presented in the theses of several of M. Broussais' pupils.

M. Palais observes that sub-inflammations may be primitive or consecutive, that is to say, that the irritation may manifest itself in the white vessels, without having existed in the sanguine capillaries, and it may be also the result of inflammation of the red tissues. M. Palais remarks that primitive sub-inflammations are incomparably more rare than the others. M. Broussais does not admit the possibility of it, but in the subcutaneous lymphatic vessels, and even here their irritations are often provoked by those of the red tissues; such are the sub-inflammations of the inguinal and axillary ganglions, produced by an ulceration of the glans, a whitlow, an ulcer of the breast, &c. Those of the internal organs on the contrary are always consequent to an inflammation and they are produced in two different manners: either they are developed in parts affected with sanguine irritation, or they are the result of an inflammation of a mucous membrane, on whose surface the lymphatic vessels open: since, as Bichat has taught us, the ganglions and the

glands participate very often in the irritation of the mucous membranes, on the surface of which their excretory canals and absorbing radicles, open. Such are the irritation and swelling of the mesenteric ganglions, which are always produced by an enteritis; tubercles of the lungs which are developed under the inflammation of the pulmonary mucous membrane, and which may also be produced, but much more rarely, by inflammation of the parenchyma and by that of the pleura covering the latter. In general the lymphatic irritation continues long after the cure of the phlogosis that gave it birth. It is thus we see the ganglions of the neck, which become tumefied during the course of a *tinea capitis*, remain in this state long after the latter has disappeared. Not unfrequently inflammation of the skin, excited by the application of a blister on a part surrounded by ganglions, produces swelling in them, which persists often after the ulceration of the skin is cured. If, as we observe in many cases, the phlogosis which causes the sub-inflammation is repeated, the lymphatic vessels receive a new stimulation that hastens the progress of disorganization. M. Palais takes advantage of this against those who object, that tubercles do not form under the influence of irritation, since they often meet them in the lungs of individuals who did not present any symptoms of inflammation; whilst in others who have died of acute pneumonia, they found softened tubercles. They do not take account of a slight pulmonary catarrh which might have existed several months before; they are ignorant that it is not necessary for an inflammation to run very high in order to develop tubercles, and that a slight irritation is sufficient; but it must be prolonged and continual. It appears even, remarks M. Palais, that this degree is the most proper to produce such an effect. Amongst the inhabitants of cold and humid countries, where the pulmonary mucous membrane has, habitually, to supply the action of the skin—amounting to almost nothing in these countries—phthisis often declares itself without our having observed any intense symptoms of inflammation of the bronchial mucous membrane of the parenchyma of the lungs; also M. Gardien observes, that it is most frequently slight contusions which give rise to cancer of the mammæ. In fact a powerful contusion will produce acute inflammation and suppuration of the tissues, whilst a slight stimulation will cause a chronic irritation which will persist and produce disorganization.



However this may be, when irritation effects for some time the white tissues, they become dense and take on a greyish or whitish color; and if resolution of this induration be not produced, there is deposited in the diseased part a white, concrete, inodorous, caseous substance, which seems to infiltrate its tissue, first in the centre and then in every part of it: this is the *crude turbercle* (*tubercule cru.*) Sometimes, and principally in the lungs of old people, there is deposited a black colouring matter, supposed by M. Broussais to be carbon; this constitutes *melanosis*. These then do not as has been thought, form a particular kind of disorganization. After a longer or shorter time this substance softens and changes into a creamy fluid, analagous to the pus of the cellular tissue; we say then that the tubercle is *mature or softened*. Meanwhile the irritation extends to the sanguine vessels of the part in which the tubercles are developed; these inflame, ulcerate, and suppurate; sympathetic irritations are excited; they are particularly felt by the heart and digestive mucous membrane, and we see the febrile state manifested, known by the name of *hectic fever*. The same phenomena are observed in all disorganizations; as long as chronic inflammation is confined to the lymphatic capillaries, no sympathetic alteration in the viscera is manifested; but at the epoch when softening of the tuberculous matter, scirrhus, &c. comes on, inflammation is lighted up in the neighboring tissues, it is repeated in the principal organs and gives place to that assemblage of disorders which terminates organic diseases.

It is not lymphatic ganglions alone that are capable of undergoing tuberculous degeneration; we meet it in many parts where anatomy has not yet shewn their existence, and it is easy to conceive of it. Tuberculous matter is the product of the exhalation of irritated lymphatic vessels: it may then be deposited wherever these vessels exist. We also see in the parenchymatous structures, the membranes, &c. this substance at first under the form of very numerous little white points, which infiltrate, if we may use the expression, the substance of the irritated organ, (miliary tubercles:) these points increase agglomerate, and end by forming masses sometimes very voluminous. The tubercles then produced in parts where we do not see lymphatic ganglions, are of the same nature as those observed in the latter.

Since humorism has lost credit, diseases of the lymphatic system have been attributed to its debility. M. Palais has very ably refuted this opinion, by showing us that the development of this system constitutes the pre-disposition to these diseases; and that since we admit that the development of all the other organs is connected with the exaggeration of their vital action, we cannot establish an exception for the lymphatic system. "When these vessels, says M. Palais, seem to cover all parts; when the ganglions, large and full of fluids seem to be multiplied; when all the white tissues are expanded, penetrated by the liquids which dilate them; when all the white elaborations predominate, and when the sanguine apparatus is plunged into inactivity, what grounds have we to establish, that the organism is debilitated and that the lymphatic system and white parts, are so more than the others? Whenever we see that a man is florid, that his chest is larger, that he has a voluminous heart, and ample arteries, we say that there exists in him an increase of sanguine activity; and when he is pale, when the white tissues are much expanded, some not only wish to pretend that the whole economy is in a state of debility, but they assert that all the most apparent tissues are more so than the others, and that the sanguine system which is scarcely visible, preserves the last remains of vital force. This conclusion is in contradiction with the preceding one; what is true in regard to the apparatus of red blood must be so of the lymphatic system." If then excess of action in the lymphatic system pre-disposes it, like all the systems to diseases, these cannot be the result of debility.

Let us now examine the circumstances under which white indurations are formed, and we will see that they are all referable to stimulating influences. We almost always see them developed in the midst of inflamed parts, or behind phlogosed mucous membranes, on which the lymphatic vessels open, the latter extending themselves to the tumefied ganglions; from whence we may conclude that irritation is propagated to their tissue. We confine ourselves here to the indication of these facts; they will be developed farther on in detail. If, as will be then seen, the ganglions of the mesentery become tuberculous under the influence of an enteritis and if it is incontestible that the tubercles of the lungs, cellular tissue, &c. and those of the mesentery are identical, the true nature of phthisis and scrofula, will be already

established by this ; but without recurring to analogy, we can directly show that pulmonary tubercles are produced also by chronic inflammation. The thesis of M. Palais contains a summary of the proofs on which M. Broussais has established this point of doctrine ; it will suffice to relate the following facts : 1st, Every body knows that a pulmonary consumption succeeds almost always a chronic pulmonary catarrh, and in cases where this affection has not been manifest, the patients have nevertheless been affected frequently with slight colds, spitting of blood and pleuritic pains. 2d, All the causes to which authors refer phthisis are irritating : such are forced exercise of the organs of respiration, the little particles of substances introduced constantly with the air into the bronchiæ in individuals of certain professions, and cold which has been pointed out as the agent producing the greatest number of consumptions. It is in cold and humid regions this disease makes its greatest ravages ; it is in the winter that its progress is most rapid. The author of the chronic phlegmasiæ reports, that when he accompanied our armies in Belgium and Holland, he saw a great number of individuals sink under this malady, and that as soon as the same troops were transferred to Italy, it became extremely rare and only destroyed those who had brought from the north chronic catarrhs ; now all these causes, and cold especially, produce chronic inflammation of the bronchial mucous membrane.

It is often objected, that tubercles and other disorganizations, are sometimes established without being preceded by apparent inflammation ; but as M. Broussais observes, do we not often see *pus* formed without any symptom of phlogosis, as is proved by cold abscesses, latent pleurisy, abscesses of the liver following blows on the head ; and nevertheless, will it be pretended that the formation of *pus* is not always the result of inflammation ? Again, besides that sub-inflammations may be primitive, no one will deny that chronic irritation of the mucous membranes, which gives rise to them in the great majority of other cases, exists often for a long time without manifesting their presence.

The greater frequency of hepatization in the lower lobe of the lung, and of tubercles in the superior, has seemed a sufficient motive to argue against this etiology of tubercles. M. Palais has joined to the enunciation of this proposition the answer which M. Broussais has made in his *Examen*.—

It is necessary to remark here, that they have changed the question; for it was never contended that tubercles were produced ordinarily by hepatization of the lung; but M. Broussais has always contended that their formation depended most frequently on chronic pulmonary catarrh; now every one knows that in this last affection the superior lobe is principally affected because the inflammation extends but very rarely to the whole extent of the bronchiæ, that it stops almost always in the parts of the bronchial ramifications least deeply seated, and these parts are in the superior lobe : inflammation then of this part of the lungs is very common, since pulmonary catarrh is very frequent. This objection then evidently leads to error ; but in reasoning according to the principle which it supposes, it will not be more victorious ; for we often see in chronic red induration of the inferior lobe, tubercles developed in its tissue ; on the other hand it is not true, as has been advanced, that nothing is *more rare* than hepatization of the superior lobe.

The influence observed of *tonics* in producing cures in scrofula, and of *debilitants* in their production has not a little contributed to make them be attributed to debility. Before explaining the apparent discrepancy of these facts with the physiological doctrines, let us remark that in subjects affected with sub-inflammation, there exist two organic constitutions differing from each other : we see sometimes a very marked development, and great mobility of the sanguine system, united with a lymphatic constitution. In these individuals sanguine irritation is almost always connected with sub-inflammation ; this condition of phlogosis excites very active sympathies and very rapidly produces disorganization : in these cases debilitants have never been seen to produce sub-inflammations, and we are not afraid to assert, that these have scarcely ever been cured by stimulants. In the other cases, more frequent than the first, the development of the lymphatic system is in an inverse ratio to that of the sanguine, now, we know that there exists neither general stimulants nor debilitants, that the same agent produces different effects in the different systems; and when we come to the article on revulsions we shall see that the greater number of causes productive of scrofula are debilitants to the *sanguine* system, which permits another system, and particularly that which is most active, to take a



greater preponderance. We will see also that tonics in curing these diseases, stimulate the sanguine system, and by this means produce a true revulsion.

We know with what energy M. Broussais has combatted the principle of innateness of tubercles, a doctrine invented by a distinguished pathological anatomist, in order to explain more easily the development of these products, the *germ* of which he contended existed in individuals. M. Palais has called up for the purpose of combatting it, this strange opinion, founded principally on the existence of tubercles in the lungs of some new born infants, as if we were ignorant that the *fœtus* may experience in the uterus the greater part of the maladies which may affect it during the course of the extra uterine life.

They have admitted in the same sense the hereditary nature of tubercles ; they have asserted that children in certain cases receive the *germ* from their parents. We find in the thesis of M. Herbelin *on Scrofula*, a proposition worthy of a place here, which is applicable to the subject we are treating, as well as to cancer and other affections, the predisposition of which may be transmitted by way of inheritance. "Scrofulous affections," says this physician, "are not hereditary in the sense ordinarily attached to this word ; it is only the disposition to contract them, which children receive from their parents, having an organization similar to theirs, and not the *germ* of these affections. The transmission of this pretended *germ* from parent to child is inadmissible ; in fact, infants are born of scrofulous parents, and never have this affection if they are removed from the influence of the causes which produce it ordinarily ; what becomes of the *germ* in this case ? Others born of healthy parents, have scrofula from the slightest cause ; from whence springs the *germ* in these ? Scrofula sometimes skips one generation and appears in the next ; what becomes of the *germ* in the generation omitted ? They can only answer these questions by hypotheses. It is much better then to reject altogether the gratuitous supposition of a *germ*, which no one has seen and the admission of which does not at all enlighten the history of scrofula." The hereditary nature of diseases extends then at farthest to the *predisposition* to contract them, a *predisposition* which may be transmitted as the traits of the physiognomy and other moral and physical dispositions infants sometimes receive from their parents.



The two principles which we have just combatted have been the source of *medical fatalism*, in establishing the incurability of organic diseases ; we will show the possibility of their cure when we speak of cancer ; let us continue our examination of the results of chronic irritations.

Albumen accumulated in the tissues which undergo white induration gives rise sometimes to the organization of accidental cartilages and fibro-cartilages. At other times in the fluids poured out and subtracted from the vital action, are found gouty and calculous concretions, &c; these different productions then happen under the influence of sub-inflammation, like tuberculous matter. M. Broussais attributes the same origin to fatty, steatomatous, meliceroustumours, : &c. sub-inflammation of the skin produces herpes, tinea capitis, and other chronic exanthems. We must refer to the same cause softening of the bones ; their solidity depends in fact on the relative proportion existing between the unorganized parts, and the organized tissue ; the latter receiving a greater activity by irritation becomes relatively preponderant, and the saline substances are not sufficiently abundant in the bones for them to preserve their solidity ; perhaps also their nutrition is changed.

Of all the transformations which the tissues undergo, the most remarkable and that which should most fix our attention, is the disorganization physiological anatomists have described lately under the names of *lardaceous*, *scirrhus*, and *encephaloid tissue*. We are still indebted to the physiological doctrine for our knowledge of the nature of these alterations and of the only efficacious treatment which can be opposed to them. Amongst the theses in which cancerous affections have been considered in their proper point of view, we remark particularly those of M M. Lemer cier, Chanriont and Maréchal, who have satisfactorily demonstrated, by the examination of their causes and phenomena, that they were the result of a chronic inflammation, or sub-inflammation. They have reduced to its true value, the opinion of the *fatalists* on the incurability of cancer, by reporting a great number of cures of this disease, whose ravages and consequences, formerly in all cases so dreadful, have made practitioners heretofore regard it as one of the most terrible scourges of humanity.

M. Lemer cier first considers the different forms under which cancer may appear, and divides them into *cancer en*

*masse*, and ulcerated cancer, corresponding to the scirrhus and cancerous ulcer of authors. When a part abundantly supplied with cellular tissue, is for some time the seat of a red or white induration, we see developed a tumour more or less regularly circumscribed, without pain, incompressible, without change of color in the skin, the volume of which increases gradually, most generally with slowness, but always with a rapidity great in proportion as the part is stimulated. After a longer or shorter time, its surface generally becomes irregular and elevated ; at the same time lancinating pains are felt, first at intervals and after a time constantly.— This, says M. Broussais, is the signal of disorganization ; which takes place when the irritation, for a long time chronic and most frequently limited to the white vessels, passes into the acute state, and inflammation seizes on the tumour. This is ordinarily carried to the highest degree of acuteness as is attested not only the pains but also by the burning heat the livid redness and the considerable swelling seated in the tumour. The circulation in the part is very active, the vessels become more developed and exhibit very marked pulsation ; meanwhile the surrounding tissues inflame, ulcerate, and the induration which they undergo, soon prepares a new disorganization similar to the first. Hence results an ulcer of hideous aspect, with a violet surface, covered by fungous excrescences and terminating in hard, elevated, inverted edges. The more it is irritated the greater its ravages ; the violent pains are exasperated more and more under the influence of all stimulations, direct or sympathetic received by it ; at the same time the ulcer continues its progress, invades the skin, cellular tissue, muscles, tendons, cartilages, and the bones themselves. Often the eroded sanguine vessels give rise to hemorrhages sometimes sufficiently abundant to prevent the effects of sympathetic visceral inflammations, which later in the disease would have infallibly destroyed the patient.

§ In the mean time the lymphatic ganglions in the neighborhood of the diseased part become tumefied, and after a while undergo the same disorganization. For a long time, also, the actions of the viscera are troubled ; always, in fact, when inflammation lays hold on a scirrhus or tuberculous mass, the sympathies soon put in play, produce in the viscera irritations which become chronic, since the action of the cause is constant. These disorders supervene particularly

in the digestive passages ; the patient is morose and loses his appetite ; the tongue is red on its edges, the thirst great, the skin of a straw color and of a pungent heat. These phenomena are more intense in the evening and taken together constitute *hectic fever*. The chronic inflammation seated in the viscera, produces sometimes an alteration in the tissues, similar to the original disease. Finally, under the influence of all these disorders, the patient emaciates and sinks into the last degree of marasmus, marked sometimes by partial or general infiltration of the cellular tissue.

Since these secondary lesions are excited by the disorganizing irritation, authors have committed a very great error in grouping them around tuberculous and cancerous affections, for the purpose of erecting these into diseases, to which they have given as attributes, the general disorders supervening during the course of the greater part of chronic irritations. It is by following this route that they have created morbid entities ; we understand nothing then by *tuberculous and cancerous cachexies*, but the assemblage of sympathetic disorders produced by these affections. Bayle had already reserved this expression, otherwise perfectly useless, for the state of decay exhibited by patients in the last moments of existence ; but he saw like other ontologists, in these general disorders the progress of the *Being* cancer, whilst he should only have recognized sympathetic irritations provoked by the *disorganizing inflammation*, irritations resembling in all respects those produced by any other cause.

Cancerous ulceration does not take place in scirrhus and encephaloid masses alone; it may manifest itself in tissues which have not previously undergone these disorganizations. This is the form of cancer called cancerous ulcer. M. Lermecier has established two species it. It may be primitive: it is thus that we see arise on the skin and mucous membranes under the influence of an irritating cause, a little vesicular pimple, an excoriation, or a simple desquamation of the skin, which are soon followed by an ulcer in every respect like an ulcerated scirrhus; at other times a simple ulcer or one kept up by a specific cause, as syphilis, after having been a long time stimulated, takes on all the characters of cancer. But in both cases the sub-jacent parts are ordinarily affected with an induration extending to a greater or less depth.

Let us establish now that the alterations, of which we have just seen the principal phenomena, occur under the influence of irritation. We have already seen that their characters appertain to this lesion : it is necessary to prove that all the causes productive of cancer act by stimulating ; In order to establish this point it will be sufficient to relate, as M. Lemercier has done, the causes assigned by authors to this alteration. Blows, falls, pressure, contusions, and in a word, the causes to which they refer cancer of the breast ordinarily, can evidently act only by irritating this eminently sensible organ ; one must be blinded by a preconceived idea, to pretend, as some modern authors have done, that these circumstances introduce into its tissue a debility leading to disorganization. When an ulcer, long stimulated by any chemical or mechanical agent whatever, puts on the cancerous character, can we mistake the cause of this transformation ? It is the same in cases where the cancer is produced by chronic exanthemata or by the suppression of a habitual hemorrhage ; causes which all authors indicate as giving rise to this disease. Can any one deny that a chronic irritation determines sarcocœle, when confessedly it succeeds to an *engorgement* of the testicle, produced by the metastasis of a gonorrhœa or a contusion ? It is said that individuals employed in certain occupations, and particularly grave diggers, scavengers, &c. are often affected with cancer of the stomach ; who does not know that men occupied in these disagreeable and disgusting occupations, make continual use of strong liquors, which must necessarily produce and keep up chronic inflammation of the stomach ? We know also that prolonged grief is the cause of many cancers of the stomach, amongst individuals of the higher ranks of society—frequently victims to the torments of ambition, of fortune, and of other ungratified passions. But what physician is ignorant of the dreadful influence of sad moral affections over the production of gastritis ?

M. Chanriont reports in his thesis, with which we are about to occupy ourselves, an opinion of Ledran too remarkable not to be related here. “We know, says this surgeon, that erysipelas degenerates into phlegmon, phlegmon into scrofula or scirrhus and the two last into cancer ; ordinarily a suppression of the catamenia or hemorrhoids, grief, melancholy, or finally scirrhus tumours tormented by active remedies, produce it. In all these causes it is impossible



to see the introduction of a virus: we only find one thing which can produce cancer, viz: irritation, pain, and a peculiar erethismus."

Subjects of an irritable constitution it is generally admitted are more frequently affected with cancer than those of a different temperament. Does not this circumstance militate in favor of the opinion we defend? The bilious temperament is considered as a predisposition to cancer of the stomach; but the physiological physicians know that great irritability of the stomach and duodenum is constantly joined to the preponderant activity of the liver, which constitutes this temperament. Cancer of the *mammæ* and neck of the uterus are more frequent in women living in celibacy and widowhood, and we see in authors that this affection was very common amongst women devoted to a monastic life. Physiologists recognize here still a cause of irritation to the uterus and *mammæ*. In the same manner as unsatisfied hunger produces inflammation of the gastric mucous membrane, venereal desires, accompanied necessarily by superexcitation of the genital organs if they are for a long time suppressed, must produce in the uterus a chronic irritation which is reflected to the *mammæ*, they being connected by the strongest sympathy. It is impossible to deny this mode of production to the cancers we are speaking of, when we see that the women to whom the privation of venereal pleasures is painful, are affected with *flour albus* and hysterea; evident results of irritation in the organs of generation. The abuse of aliments produce gastritis like abstinence; so the abuse of venereal enjoyments produce cancer both of the uterus and *mammæ*. The explanations just given seem to us sufficient to remove the apparent contradiction of facts.

After having pointed out these different causes of cancer, authors have admitted others which are inappreciable. "But why have they not been able to appreciate them, asks M. Lemer cier? it is because they have not taken account of the physiological changes, operated in the individual, and of the action of an irritant that has acted only in a low degree. Let them, however, follow back these changes to their cause and they will understand precisely its nature; let them question patients affected with cancer, and all, with the exception of a few individuals of very obtuse sensibility, will refer the development of their disease to some irritation: thus. for instance, a woman will have re-



ceived a slight blow on the breast, or will have been seized with violent fear during her menstrual discharge: or a man may have lightly bruised his testicle, &c. The first cause of cancer then always is an irritation, which the physiological physician may detect if he pays a little attention to it; but what is truly inappreciable by him is the predisposition of the individual to contract cancer."

We agree in opinion with M. Lemercier on the impossibility of explaining how the action of the same cause produces in different individuals, disorganizations of a different nature. No data possessed by us will enable us to resolve this question; and to admit *morbific dispositions*, a peculiar aptitude to contract one disease rather than another, is laying aside the explanation of the difficulty and not resolving it. However this may be, it must be acknowledged, that we see in certain individuals a chronic inflammation produce no other consequence than induration, whilst in others the slightest excoriation is sufficient to determine a cancerous ulcer. A neglected pulmonary catarrh gets well sometimes after several months duration? and in another individual the same affection methodically treated from its commencement, nevertheless produces a sub-inflammation of the lungs and the formation of tubercles. We should be cautious in considering, however, these predispositions unconquerable: we may correct their effects; for it is necessary that stimulating causes act before the disease is established, and in many cases the march may still be arrested.

We have already seen, when speaking of tubercles, what should be thought of *germs*, by which they have pretended to explain predispositions to disorganization. In unveiling the nature of cancer, the author of the physiological doctrine has overturned the idea of *taint* or *virus*, made to play, not long since, so great a part in the production and extension of this malady. M. Chanriont has ably discussed this question; the following is his solution: if hemorrhoidal tumors, vegetations from the dura mater, induration of the pylorus produced by chronic gastritis, can pass into the cancerous state under the influence of stimulants, would it not be ridiculous to suppose that this pretended cancerous virus has the property of producing at the same time hemorrhoids, chronic gastritis, &c. When a sub-inflammation remains protected from all irritating causes, we do not see it degenerate into cancer. How can a virus so terrible as they sup-

pose it remain stationary? How does it happen that after the extirpation of a cancerous tumour the disease is not always reproduced? It is certain that we can develop, if we may be allowed the expression, a cancer at will, by irritating a simple ulcer for a long time; the disease then has arisen without any virus, or this has been accidentally developed by stimulants. If the engorgement of the axillary ganglions, in cancer of the breast, was produced by the resorption of ichor, how could they be resolved after the amputation of this organ? Besides, ought not the infection to be general, and all the tissues likewise to degenerate into cancer? Moreover, before admitting the *virus*, it is necessary to show that cancer is contagious, for all virulent affections present this character. But, we are aware that we add little confidence to the observations reported by Tulpius and Peyrilhe, and every body knows the experiments of M. M. Duprütren, Alibert and Bieth, showing this disease not to be contagious.

M. Chanriont repeats the remark of Broussais, that the idea of a constitutional cancerous virus, in reference to practice, produces the most pernicious effects: because physicians who expect to meet an enemy invulnerable by nature, convinced of their impotency, dare not combat it; they conduct slowly to the grave, by useless palliatives, the unhappy victims trusted to their care, or rather they suffer them to die in the horrors of despair. Every one knows in fact, that patients presenting the external character of the constitution which predisposes to disorganization of the lungs, and those born of parents affected with cancers, were devoted to certain death, or to the chances of a capital operation, if they were affected with chronic pneumonia or sub-inflammation of the breast. Every method of treatment seemed superfluous, the malady was abandoned to itself, and the continuation of inflammation bringing on disorganization of the tissues, the prognostic rarely failed to be justified, whilst a methodical treatment would often have given it a formal contradiction. The principle of the incurability of cancerous and tuberculous affections was then the result of this fatal theory of *virus*, of *innate germs*; and this blindness was even carried so far in this respect, that when a tumour presenting all the characters of cancer, and which had been called by this name, or when a patient, after exhibiting all the signs of pulmonary consumption, re-

covered, they pretended to have committed an error in the diagnosis, to have been deceived by false appearances; in a word it could not have been a cancer because this is incurable: and why do they say it is incurable? because they have never seen it cured.—That is to say, the consequence furnishes the principal from whence they draw the consequence. But again, “who can assert, objects M. Broussais, that the disease would not have yielded to other means than those employed.” However this may be, we possess at the present day, too many reports of scirrhus and even ulcerated cancers cured, to leave in doubt the curability of this disease. Amongst the particular histories demonstrating this, we remark principally those set forth by M. Maréchal in his thesis. The question to which these facts relate is too important for us to neglect bringing up again its analysis here; these are the most victorious arguments we can employ to show the true nature of cancer, and the possibility of often curing it, when properly treated. “If the observations we have reported,” says M. Maréchal, “do not appear sufficiently numerous or conclusive to justify the conclusions drawn by us, we hope at all events that they will stimulate practitioners to repeat, without prejudice, the same experiments, if prejudice be not a more incurable disease than cancer. We should, at all events, be indebted to M. Maréchal for having laboured to combat this formidable enemy of truth; but we should reproach him for the care he has taken in concealing the source from whence he has drawn. He well knew the *Examen* and *Histoire des phlegmasies chroniques*; after reading his thesis we are not permitted to doubt it: why has he named M. Broussais but once, and then only to criticise him?

CASE 1. Adélaïde Ménestrier, seamstress, aged 20 years, perceived in the month of July, 1816, the development of a tumour in the left iliac region, accompanied by acute pain. A physician had leeches applied several times, (doubtless on the painful part,) prescribed a demulcent ptisan and emollient topical applications. The employment of these means were ineffectual during four months; the abdomen augmented so as to become very voluminous; the patient for a long time passed purulent matter by the anus; she then found herself relieved and the volume of the abdomen diminished. Having entered, at the close of December, into the hospital Saint-Antoine, where she passed six weeks;

she was submitted to soothing treatment, from which she received no relief. Meanwhile, the symptoms continuing to increase, Adélaïde entered the Hotel Dieu, 16th January, 1817. She exhibited on her arrival the following condition: acute lancinating pains in the whole abdomen, particularly in the left iliac region, where pressure was insupportable; all movements cause pain; the touch discovers a deformity in the neck of the uterus and a tumour as large as the head of an infant, occupying all the left side of this organ in the space comprised between the superior anterior spinous process of the ilium and the linea alba, and filling all the left iliac fossa. It was evident that it was developed in the uterus or its dependencies, since the finger applied to the neck of this organ perceived all the movements communicated to the tumour by the other hand. From the lancinating pains, the fetid odour of the fluids discharged through the vagina, it was more than once affirmed to be a carcinomatous tumour already designated. The debility is extreme; for several months has lost sleep almost entirely; the fever undergoes every evening a paroxysm of cold, followed by heat and sweat. Diluent drinks, emollient injections, baths, a dozen leeches on the left iliac region and narcotic cataplasms, are prescribed.

17th, patient is in the same condition; same prescription renewed. 18th, pain has extended to the hypogastric region: twenty-four leeches ordered to the left iliac and hypogastric regions. 19th, pains less acute, but the pulse still febrile and the evening exacerbration more violent—thirty leeches are ordered to the same parts; other treatment continued. 20th, the febrile condition continues, but the other symptoms are moderated; diluent drinks, cataplasms, baths, broths, twenty-four leeches. 21st, syncope after the bath, violent pain over the eyes, insomnolency, fever, diminution of the volume of the tumour, pain more acute, hunger; emollient drinks, baths, narcotic cataplasms, soup and pap. 22d, same condition: infusion of lime flowers, anodyne drink and fomentations, anodyne injection, soup, pap, eight leeches—during the day the patient felt better; the same prescription however was repeated on the 23d; on the following days there was an alternate increase and diminution in most of the symptoms: the same remedies are continued except the leeches; to these were joined the use of calomel and opium.



30th, the pains and fever have become more intense ; the next day fifteen leeches to the hypogastrium are added to the prescription. 3d of February, pain continues, pulse frequent, sensible diminution of the volume of the tumour ; same prescription. 4th, same condition ; six leeches and a bath—syncope in the bath ; pains acute and more extensive ; fever high, mouth bitter, nausea, and increased pain ; diluent drinks, narcotic cataplasms and injections, soup—vomiting, fever intense. 6th, pain severe, abdomen tender to the least pressure ; twelve leeches, soup, bath. 7th, same condition ; injections and narcotic fomentations. 8th, remarkable amelioration, diminution of all the symptoms—narcotic cataplasms, bath, fomentations, whey, jelly (*decoc-tion blanche*.) This amelioration continued for several days : sometimes however interrupted by exasperation of the lancinating pains. 19th, the volume of the tumour is augmented ; the belly tumefied ; flaxseed tea, ten leeches on abdomen, five to the vulva ; next day amelioration ; same prescription. 27th, no notable change : twelve leeches. 28th, little relief ; ten leeches—next day, blister applied to the internal part of the left thigh. 4th March, tumour appeared reduced to the size of an egg ; but from time to time gives considerable pain ; eight leeches. 6th, more marked diminution in the volume of the tumour ; absence of pain ; narcotic cataplasms and injections, opium internally ; about a fourth of her diet during health, allowed. 8th, exacebration : fifteen leeches. 10th, ten applied to vulva—a slight sanguine discharge from the vagina—next day, feels comfortable ; forces returning, tumour no longer painful ; it is felt in the left iliac fossa like a small pullets egg flattened. 14th, patient left the Hotel-Dieu, three months after her entry, and nine after the commencement of the disease.

Although Adélaïde took little care of herself, she was soon restored ; her health strengthened daily ; the tumour became insensible and continued to diminish in volume ; and her strength, much increased, suffers her to take long exercises ; she even indulged herself in the pleasures of love without any inconvenience. About the 17th April, her courses reappeared and the malady was still ameliorating. But at the close of the same month she relapsed ; the abdomen became painful ; symptoms of gastro-enteritis and lancinating pains announced the return of the tumour ; the application of twenty-five leeches, baths, emolient top-



icals and a blister arrested the symptoms promptly ; and after the use of some aromatic vapour baths the courses reappeared—four months after this relapse Adélaïde was perfectly re-established—there could be felt on the left side of the pelvis a tumour about the size of a nut ; but the neck of the uterus offered no deformity. M. Lallemand revisited her eighteen months after her departure from the hospital ; she told him that she had several times felt severe pains in the left side ; to which she had, without consulting any one applied leeches and that the symptoms had promptly disappeared.

In what organ was this tumour seated ? The movements communicated to it, by introducing the finger into the vagina and pushing the uterus, would lead us to suppose that it was a lesion of this organ ; but the rarity of cancer in the lateral parts of the uterus, the ovoid form of the tumour, its situation in the left iliac fossa, leads M. Maréchal to think that the ovarium was affected. According to this hypothesis, he explains the purulent stools by a sympathetic irritation of the colon, or an irritation determined by the contact of the diseased ovarium with the sigmoid flexure of this intestine. “But although, says he, the true seat of the disease be unknown to us, the character of the pains, the hardness of the tumour, its tendency to reappear, the absence of fluctuation, and the ichorous discharge poured out by the uterus, do not permit us to doubt with regard to the character of the affection ; we cannot mistake in this tumour a scirrhus already degenerated. In searching amongst authors for what has been said on this disease, we will find that they do not give more characteristic signs than these.”

CASE 2d. Michelle Bahaud, of a feeble constitution, perceived at the age of twenty five years, a small tumour in the left breast, which at first rolled under the fingers and was the seat of lancinating pains ; at the end of six months it had acquired the size of a nut and very painful to the slightest pressure. After a year of fruitless attempts to discuss the tumour, the patient was informed that she was affected with scirrhus of the breast requiring prompt extirpation. She refused to have the operation performed ; the disease progressed, symptoms of phtihisis were added, and Michelle entered the Hotel Dieu, the 14th December, 1816, in the following condition : a tumour, hard, swollen, unequal, size of a large goose egg, occupied the middle external part of the

left breast ; the patient experienced habitually dull pains in it and occasionally intolerable lancinations extending to all this side of the thorax and shoulder, had lost sleep for five or six months, her body was extremely emaciated, her skin dry, habitually hot and covered with furfuraceous scales; every evening she experienced a febrile movement which continued a great part of the night and terminated by an abundant viscid sweat ; she had several attacks of hæmoptysis, coughed continually and expectorated a great deal of thick puriform matter. These symptoms of consumption, joined to the local disease, leaving no hope, only juleps, deluents, &c. were prescribed during a fortnight ; but the pains in the breast becoming exasperated, as well as the pulmonary symptoms and the patient earnestly demanding relief from her sufferings, M. Lallemand prescribed eight leeches to the left breast, a bath and emolient cataplasms. The pains, fever and cough having sensibly diminished, the application of the leeches was repeated four days after. At the end of ten days, M. Lallemand found the tumor less hard, that the cough and expectoration had diminished, and that the fever had disappeared ; encouraged by this first success and no longer despairing of a cure of the disease, he continued the same treatment, and prescribed from that time a severe regimen. Little by little the tumor became softer, decreased in volume, and at the end of two months and a half, was reduced to the size of a filbert ; the symptoms of the affection of the lungs had entirely disappeared, the patient had regained her freshness and a good deal of flesh.— There were, however, in this short time, one hundred and twenty leeches applied, and the patient had only taken soups, broths, milk, rice and other like aliments. She thinking herself near well, would not wait the entire disappearance of the tumor ; she could not be prevailed on to stay, but after her departure continued the treatment. At the end of a month and a half the tumour disappeared and Michelle recovered her vigorous health.

This case proves very clearly the possibility of curing cancer, even after the development of lancinating pains ; or the existence, according to the observation of M. Lallemand, of diseases so closely resembling cancer, that it is impossible to distinguish them.

CASE 3d. Elizabeth Gros, had been nursing her seventh child for eight months, when after being exposed to cold

whilst in a profuse perspiration, a small hard, glossy tumour, accompanied with slight pain, appeared in her left breast.—Some days after, at the conclusion of a fit of anger, it suddenly increased to the size of a fist and went on increasing rapidly. From this moment the pains became so lancinating and violent as to deprive the patient entirely of sleep. Persuaded that it would be of advantage, she continued to suckle her infant from the diseased breast. The suction rendered the pains still more severe; the volume of the tumor increased from day to day, and its weight was so great that she had to support it constantly; the least movement general or partial was insupportable on account of the pains produced. There existed then three elevated tumors, one at the superior part of the breast, another at the internal part and the third at the external part.

The nipple had entirely disappeared by their progressive encroachments. The skin had a dark marbled appearance, abscesses soon formed; ten opened successively; and the evacuation of the pus only produced a momentary relief.—Until now the patient had employed nothing but emollient cataplasms: having at length asked medical assistance, a physician directed her to quit suckling her infant, and to have four leeches applied to her breast, which she continued to cover with emollient cataplasms. The loss of blood was very abundant, and produced considerable relief. Eight days after, four leeches were again applied, and the relief was more sensible; but not being able to continue the treatment, the patient entered the hospital of Montpellier the 1st July, 1820, two months after the first attack of the disease. The breast was then about the size of a full sized foetal head; the three tumors were still very sensible and hard, the openings of the abscesses were cicatrized; one however existed still that discharged a white and somewhat fetid pus; in the centre of the tumour was a pit in which the nipple was buried; the lancinating pains were only felt at intervals and during the day. Eight leeches were prescribed, around the breast, emollient cataplasms, bath and diet—the blood ran freely and the next day the volume of the tumour was diminished. The pains were less frequent and less acute. On the 7th eight more leeches were applied, the bites of which afforded a good deal of blood.—From that time the pains ceased, the nipple became more prominent, and the breast was reduced gradually to its natu-

ral size. There being some little pain, on the 14th, five leeches were applied; the improvement went on and the patient was soon discharged perfectly cured.

M. Maréchal remarks that, notwithstanding the external appearances of the tumour, when the patient entered the hospital, and what authors have said on the prompt development and rapid march of *milk scirrhus or cancer*, as they have called it, M. Lallemand did not judge the disease of Elizabeth to be a true cancer and that he even predicted the prompt cure by means of topical bleeding and emollients. However well founded the opinion of this professor may be, we should not attach any less importance to this case,—a case demonstrating the happy effects of local bleeding in irritations of the white tissues, no matter how deep rooted or ancient.

CASE 4th. M. Pons, a physician of Agen, has reported in the *Journal Uniersel des sciences medicales*, the case of a woman who some time after having weaned her third child, saw developed in her right mamma a little tumour which opened in two places, discharged a small quantity of pus and cicatrized. Two months after, a new tumour, larger than the first manifested itself. A physician consulted by her, pronounced the disease cancerous, and proposed an operation; the patient giving up in despair, refused the operation, resumed her labors without paying any farther attention to it, which did not appear to have any effect on the disease, whose progress was very slow; for it was not until the expiration of about four years and a half after its appearance, that the tumour—about four or five inches in every direction—commenced to soften: a small point opened and discharged pus; the borders of this opening increased and formed an ulcer more than two inches in depth; the edges everted, seemed formed of an erectile tissue. Notwithstanding the feebleness and extreme emaciation of the patient, on the 8th of May 1820, M. Pons had twelve leeches applied around the tumour, had it covered with emollient poultices, and prescribed a severe diet, nothing but gum water being allowed. Two days after six more leeches were applied, and from that time amelioration was remarked; also the sixth day after this rigid diet, she was astonished to find that she had more strength than when she took more food with a view of increasing it. Five leeches were again prescribed, the cure advanced rapidly; food was permitted little at a time, and by the 25th of July the patient was entirely cured.



CASE 5th. A woman aged 52 years, in whom the period of the cessation of the menses had been attended by violent symptoms, felt in the month of August, 1819, slight pains in the left mamma, which returned periodically every month. Six months afterwards, a small tumour about the size of a filbert, was developed, rolling under the skin. It augmented gradually in volume, and three months afterwards had acquired the size of a goose egg; it was hard, unequal, wrinkled and caused lancinating pains at intervals. The skin covering it, was tense, shining, and furrowed by small vessels. A surgeon prescribed frictions with narcotic tinctures, which rendered the pains more intense and continued. In the meanwhile the skin became thinner towards the middle of the tumor, an opening formed which gave exit to a purulo-sanguinolent matter of a fœtid odour; the patient could not sleep, she digested badly and emaciation progressed very rapidly. Another surgeon advised amputation of the breast, but the patient refused. According to the advice of M. Olmade, a physician of Montpellier, narcotic and emolient cataplasms were applied, and renewed at intervals of four hours: every three or four days leeches were applied around the tumour, the bites of which were allowed to bleed for several hours. The patient finding herself bettered by this treatment, continued it faithfully; insensibly the pains disappeared; sleep and appetite returned; disgorgement of the tumour took place; the openings cicatrized; and in the space of two months, the patient was entirely relieved from her disease. During the two months one hundred leeches were applied.

In the patient who was the subject of this case, the cancerous affection was perfectly characterized, for it presented all the series of phenomena, which authors have assigned to cancer in the descriptions they have given.

CASE 6th. F\*\*\*, of a nervoso-sanguine temperament, three years after being affected with a gonorrhœa, perceived that his testicle was augmenting in volume; the tumefaction exempt from pain, yielded to emollient poultices; but eight months afterwards the testicle commenced swelling slowly; at the end of some time lancinating pains came on, which the patient compared to the sticking of needles—seldom at first, but afterwards very frequent. The testicle was very hard, and its surface unequal and puckered. In a short time the pains became so intense, as to deprive the patient



of sleep; he entered then into the *hospital St. Eloi de Montpellier*, the 6th of January 1820, presenting the following condition: the scrotum was engorged, the left testicle appeared about the size of the fist, was painful, very hard and puckered on several points of its surface, The epididymus and spermatic cord presented several points of engorgement; the eminences of the testicle had contracted adhesions with the scrotum, which raised at the corresponding points, and depressed in the intervals, was red and shining. The right testicle was healthy; every evening the patient became febrile. M. Lallemand prescribed eighteen leeches to the perineum, an emollient cataplasm, mucilaginous drinks, and a light diet. On the 8th the engorgement of the scrotum was considerably diminished, the pains were less: twelve leeches to the perineum. Next day the pains were less frequent, and the fever had ceased, 11th the testicle seemed slightly diminished; five leeches to scrotum and a bath. The following days there was a sensible diminution of the testicle which was no longer painful, but preserved its hardness and inequalities. On the 15th the testicle commenced to soften and six more leeches were applied to the scrotum. The emollient cataplasms were continued, repose and severe diet were enjoined. Insensibly the hardness of the testicle and the engorgement of the cord disappeared; the parts assumed their natural size, and on the 25th the patient left the hospital perfectly cured.

This case does not permit us to doubt of the cure of strongly marked sarcocele.

In the 7th CASE, M. Maréchal speaks of an individual who, after a gonorrhœa, was affected with an engorgement of the right testicle, accompanied with acute pains; but as the tumour and nature of the pains did not present the characters of sarcocele, it seems to us that we cannot draw any conclusion with regard to the curability of this disease by antiphlogistics.

CASE 8th. A woman aged 55 years, affected with amenorrhœa during three years, felt after a fatiguing days journey a severe itching, at the internal canthus of the left eye, which she aggravated by scratching. During the night, her sleep was disturbed by lancinating pains: next day the lids were engorged; an inflamed lump somewhat hard existed at the internal angle. The patient employed without success, a poultice made of the pulp of an apple, and lotions

of elder water. The hardness of the tumour increased, very acute lancinating pains were felt, and there was joined to the evening fever, head ache and disturbance in the digestive organs. A student of medicine recognizing in the tumour a scirrhus character, advised the application of twelve leeches, emollient poultices and diluent drinks. Another person, on the contrary took it for merely a lachrymal tumour, although compression of the little tumour did not make any fluid escape from the puncta lachrymalia, and although it was incompressible and unaccompanied by epiphora. In order to clear up his doubts, the patient consulted M. Lallemand who confirmed the first opinion, and attributed the tumour to a scirrhus development of the cellular tissue, which seemed about to produce ulceration of the skin. In order to remedy the evils pointed out above, he prescribed a bleeding of six ounces and a poultice. Next day the pain in the head had disappeared, the tumor was less red and less painful; the poultices were continued. The day after eight leeches were applied around the part; there only remained then a small inflammatory lump, which disappeared completely in eight days by the use of poultices.

In the following cases we will see the happy effects of local bleeding in the treatment of cancerous ulcers.

CASE 9th. Antoine Durand was affected at the age of 45 years, with a little pimple in the middle of the inferior lip, that broke on the sixth day, and gave place to a small ulceration, which cicatrized after several applications of salt and nitric acid, but opened again six weeks after and remained stationary for four years. Scabs formed on the surface, which either fell or were scratched off and were soon replaced by new ones. At the commencement of 1819, a surgeon cauterized it with nitrate of silver, which formed an eschar, leaving a considerable ulcerated surface when separated. From that time the whole lip became swollen and painful. Another had recourse to applications of corrosive sublimate. All the symptoms augmented; the pains became more acute and frequent; the borders of the ulcer became everted and it formed on the middle part of the lip, a loss of substance so considerable, as to prevent the mouth from closing. On the 8th of May M. Durand entered the hospital *Saint Eloi*. M. Lallemand recognised the cancerous character of the ulceration by the hardness and eversion of its edges, which appeared lardaceous and was the seat of lan-

inating pains ; he prescribed the application of eight leeches around the lip, and an emollient poultice after they were removed. The hardness and pains in the lip diminished. On the 12th he had the same number of leeches applied and the amelioration became more marked ; on the 13th at the request of the patient, eight more leeches were applied ; the employment of the cataplasms was continued : on the 22d the pains had almost disappeared, and cicatrization had commenced : 13th June the pains had completely disappeared ; there only remained a little fragment of border to the ulcer about the size of a small pea, which was removed by a bistoury. A few days afterwards the patient left the hospital perfectly cured.

Every thing is striking in this case, says Maréchal ; the disease appeared spontaneously, that is to say, the patient did not know to what cause the appearance of a little pimple on the edge of the lower lip could be referred ; the ulceration made such slow progress, as long as no remedy was applied, that it seemed to be stationary ; on the contrary it marched with rapidity from the first application of corrosive substances ; they created in a short time an ulcer which destroyed indiscriminately the teguments, cellular substance, and muscles. The patient, we should remark, very justly observed that the ulcer, before attacking the mucous membrane, only gained extent superficially and not in depth ; but that after the employment of caustics, as soon as this membrane became affected the ulcer made extremely rapid progress. This circumstance is well worthy of remark ; because it has been given by Bayle as one of the most characteristic signs of cancerous ulceration.

CASE 10. A sailor aged 62 years, was affected with a small ulceration on the upper lip, after having labored twelve years under a gonorrhœa which had been treated during four months by sudorifics and mercurial pills. This ulceration after remaining some time stationary, although covered with chewed tobacco, made rapid progress and attacked the whole upper lip. The disease having been thought cancerous, a plaster, the composition of which we do not know, was used, and the patient himself several times touched the ulcer with the sulphate of copper. Not obtaining a favorable result he entered the hospital Saint Eloi, April 7th, 1820. The upper lip ulcerated in its whole extent from its adherent to its free border, and from one commissure to the oth-

er, presented at its middle part a considerable loss of substance. The surface was covered with granulations and little fungous excrescences ; it had a yellow tinge on some parts, and black on others ; its borders were thick and everted, particularly at the superior part ; the pains violent and pricking, became sometimes lancinating.

Notwithstanding the cancerous character of this ulcer, as it could not be operated on, and as the antecedents seemed to indicate that it might have a syphilitic taint, M. Lallemand prescribed the liquor of Van Swieten : and sometime after, not seeing any effect from the treatment, had six leeches applied to the lip : the next day the pains had ceased ; on the third day a new application of leeches, emollient poultices, and a bath produced a still more marked effect ; the edges of the ulcer sank, approached each other, and from this time the cicatrization went on rapidly. Towards the end of the month of May, a small fungus appeared on the upper gum ; it was cut off ; and as it was attributed to the corrosive sublimate treatment, this was suspended and the cicatrization made more sensible progress. On the 8th of June, leeches were again employed and the cicatrix soon formed. The patient was then directed to take Plenck's pills ; and on the 24th he left the hospital.

In the following September another small white pimple formed on the upper lip, which soon became painful and ulcerated. In a short time it occupied the whole lip ; but no longer had the same aspect it originally assumed ; it was greyish over the whole surface, superficial, the borders neither hard nor everted. The liquor of Van Swieten was again administered and emollient poultices applied ; in less than two months the cicatrization was completed.

We see here an ulceration, at first venereal, afterwards become cancerous by the ill timed application of stimulants ; for the first ulcer presented the characters of cancer : the surface was not grey but yellow and black on certain spots ; the edges were neither red nor perpendicular, but were thick, everted, seemed formed of a lardaceous tissue, and the ulcerated part was the seat of lancinating pains. The liquor of Van Swieten was unattended with benefit the first time used ; local bleedings and emollient applications, alone were beneficial. The second time, on the contrary, the ulcer presented entirely a venereal aspect, and it yielded to sublimate. to the administration of which. it is true. the ap-



plication cataplasmas was joined. But doubtless it might have taken on, later, the characters of the first and then have resisted the mercurial treatment.

In the patient who is the subject of the 11th CASE, there existed near the internal angle of one of the eyes, an ulceration accompanied with scabs in the corresponding nostril. This affection yielded to local bleeding; but the characters do not appear sufficiently well marked for us to give it in detail. The following case is taken from M. Pons, who has also established the happy effects of antiphlogistics in cancerous ulceration.

CASE 12. A woman, aged 59 years, had not menstruated for 12 years, and for the three last had been affected with leucorrhœa; about the first of June she perceived a small pimple forming on the upper lip which produced a good deal of pain during meals. To this pimple succeeded an ulcer, so promptly developed that by the end of July almost the whole of the upper lip was affected by an ulcer with everted edges, discharging an offensive ichor. M. Pons and another physician regarded this affection as cancerous.

The latter proposed the application of the arsenical paste, or the removal of the disease by the knife. M. Pons insisted on trying the antiphlogistic treatment before resorting to these means. On the 23d July he had four leeches applied around the ulcer; he prescribed absolute diet, and only allowed gum water; 25th four more leeches were applied to the same part, and strict regimen was continued; 27th the leeches applied again, and from that time the borders of the ulcer were lowered, its extent diminished one half, and its appearance very flattering.

The 30th July four more leeches were applied and food was allowed; every day the cicatrization progressed, and by the 7th of August this frightful ulceration had entirely disappeared, without leaving the slightest trace.

CASE 13. 13th October, a woman aged 45 years, was affected for six years with an ulcer of bad character on the back of the foot; it was about the size of a dollar, with hard and everted edges, discharging a foetid, purulent sanies and surrounded by varicose veins. Various topicals were employed without success. Lancinating pains manifested themselves at such short intervals, that the patient was forced to keep her bed. This ulceration was judged cancerous, by two celebrated practitioners; M. Batigue however, resi-



dent surgeon of the hospital Saint Eloi, did not despair of cicatrizing it by means of emollients. He had the foot enveloped in cataplasms prepared with decoction of Hyoscyamus ; he prescribed local baths of the same plant ; a few leeches were also applied around the ulcer, which under this treatment was completely cicatrized at the end of two months. During the six following months, the patient enjoyed good health. After this time, says M. Maréchal, "she fell into a state of languor, was seized with a consumptive fever, marked by evening exacerbations, and she died one month afterwards, in a cachectic condition, characterized by an infiltration of the abdomen and inferior extremities ; we had no opportunity of making a *post mortem* examination."

In the two following cases M. Maréchal gives an account of two cancerous ulcers, whose cures were crossed by accidents that produced death ; these two facts are very remarkable, because they afforded an examination of the diseased tissues, which had been already moderated by the antiphlogistic treatment.

CASE 14. Francis Manuel, aged 59 years, had on the back of his hand, for several years, a wart about the size of a pea which he excoriated several times, and which was as often covered with a brownish scab. After having been 12 months stationary, pretty sharp pains began to manifest themselves ; a little ulceration formed but made little progress, until Manuel after having consulted a surgeon, cauterized it with nitrate of silver. From that time the disease marched rapidly towards disorganization ; all the symptoms became augmented ; the pains acute, lancinating and more frequent ; they affected all the dorsal region of the hand. An ichorous, fetid and sanguinolent fluid was discharged from the ulcer, the borders of which became every day thicker and more everted. Manuel wishing to arrest the progress of the affection, employed, according to the advice of several physicians, a variety of irritating topicals, that far from diminishing the disease, aggravated it : the ulceration progressed every day ; a pungent, burning heat was felt in the surrounding parts which by degrees became engorged. Finally, four years after the invasion of the disease, he entered the hospital at Montpellier ; the ulceration then occupied all the dorsal face of the hand from the radio-carpal articulation to the first phalanx of the fingers. Its borders were hard, livid, everted, and seemed to be formed

of a lardaceous tissue: brownish fungi, and gangrenous eschars were observed on several points; and a fetid ichor was discharged. The inflammation extended to the fore arm, all whose movements were painful. The straw color of the face, the deprivation of appetite, the langour of digestion, sufficiently indicated alteration in the viscera. Large emollient cataplasms were employed with decided effect; for on the third day of their application, the ulcer had already changed its aspect and assumed a rosy color; the eschars had disappeared; the ichor was less fetid; the lancinating pains less severe, and less frequent, permitted the patient to get several hours sleep.

The 14th June, fourteen days after his admission, four leeches were applied to the inferior part of the forearm, and six to the superior part of the phalaax. On the 15th, the pains had still farther diminished, as well as the engorgement of the forearm; the patient slept the whole night; the movements were less painful; the aspect of the ulcer improved—17th, improving; the whole surface became of a rosy hue; a slight itching had succeeded to the lancinating pains; the disorged borders were no longer hard and shining, but were becoming even with the surface and approaching the centre; in a word, the ulcer was progressing towards cicatrization, when on the 23d, the arm and forearm were invaded by a phlegmonous erysipelas, which destroyed the patient in eight days.

*Autopsy.*—The borders of the ulcer, which were every where hard, thick, lardaceous, and everted, when the patient entered the hospital, had become softened and directed towards the centre of the ulcer; those of the superior part, on the side of the forearm, were animated, and no longer showed any trace of cancerous tissue; the sub-cutaneous tissue was supple, injected with blood, and only slightly engorged with serosity. Those of the inferior part, on the side of the fingers, showed still in certain points, traces of the fibrous organization, and in others, the lardaceous appearance of the cancerous tissue.

CASE 15.—In the patient who was the subject of this case, the cancer commenced as in the preceding one, by a little wart, situated on the same region, that after being cauterized several times, became painful. The patient wishing to destroy it, burnt it with hot pitch. The little ulceration resulting from this cauterization, acquired in a short time

the size of a 25 cent piece and then remained for two years nearly stationary. Towards the month of July, 1820, acute pains supervened suddenly. A physician applied an unguent, composed principally of verdigris; the patient used this for five or six days, but seeing the disease increase, the fingers becoming engorged and painful, he suspended the use of it for three weeks. Having consulted another physician, he applied a red plaster, whose composition we do not know, but which augmented so much the pains, that from this moment he lost sleep, gave up all remedies, and entered the hospital *Saint-Eloi*, the 18th January, 1821. The ulcer was about four inches in diameter; the edges hard, thick, irregular, and everted, particularly towards the superior part; large fungi arose from the bottom; the forearm, the hand and fingers were enormously engorged. A black, fetid sanies was discharged from the ulceration; the pains were sometimes lancinating, sometimes like the gnawing of an animal—the straw color of the face and conjunctiva, the contraction of the features, the heat of the skin, which was dry and earthy, the redness of the tongue, the engorgement of the axillary ganglions, the lancinating pains experienced by the patient in the members and thorax, left no hope of cure, even from amputation; but there was a hope of palliating the disease by employing those remedies which had cured the same affection in a less advanced state.

On the 19th, twelve leeches were placed around the ulcer and emollient narcotic poultices. Three days afterwards the pains were calmed—23d, remarkable change; the borders of the ulcer seemed less thick; the vegetations no longer bled so easily; the sanies is almost inodorous: the ulcer assumes a better appearance, and has no longer those black spots; the pains are not so frequent or acute: poultice. 24th—improvement continues: wine of gentian, infusion of camomile—25th, the forearm has become swoln, red and painful: julep; infusion of lime flowers; sirup of poppies, two ounces; opium, one grain; lemonade; six leeches to the forearm. The symptoms became calmer during the two following days; May the 28th, phlegmonous erysipelas reappeared, extended to the thorax, and the patient died the next day.

*Autopsy.*—The diseased limb was infiltrated with a great quantity of serosity; the borders of the ulcer though very much reduced, were still in certain places everted, and form-

ed in part a scirrhus, lardaceous tissue. The bones of the metacarpus were almost all carcinomatous, particularly towards their articular extremities. Some of the tumours observed on the ulcerated surface were formed of an encephaloid matter; but the borders of the ulcer which during life, were entirely scirrhus, had resumed, in a great part of their extent, their primitive texture.

"There is no need of remarking, says M. Maréchal, what influence the irritating corrosive applications, had in producing unhappy results, in the two preceding cases; but a very important circumstance, worthy of being insisted on, is the change produced in the edges of these two ulcerations, which though scirrhus, lardaceous and everted, at the time of the admission of the patients, were made to resolve, and assume in a great part of their extent, their original organization. Certainly no one could doubt the existence of these new tissues, the disease was not concealed; a simple inspection was sufficient to make it known; besides, in dissecting the parts, after death, they were found in points where resolution had not taken place. We must then conclude that these new tissues may disappear when we combat the irritation causing their development."

M. Maréchal concludes his thesis, rich in facts, with some general reflections on the incurability of cancers, which he refutes victoriously. The idea of a peculiar predisposition to contract the disease, a predisposition whose results they regard as inevitable, is one of the principal causes of the theory of the fatalists. It is incontestable, as has already been observed, that in many cases, cancers are developed in certain individuals by such causes as in others would have produced simple inflammation. But, because we must admit a particular disposition in certain organizations to the development of cancer, can we decide that this affection is incurable? White tumours, caries, &c. which are developed after the slightest causes, and the predisposition to which is found in the lymphatic temperament, are not regarded as incurable, although the cure is difficult. M. Maréchal observes with reason, that if we make an abstraction of diseases produced by external causes, whose action is very energetic, almost all others require for their development a particular predisposition; that, of a great number of persons exposed to the same influences, one is affected with pleurisy, another with hepatitis, a third with intermittent fever, a fourth with



rheumatism, &c. whilst others are exempt from all diseases. We do not agree in opinion with this physician, when he says that the morbid predisposition of each individual, depends on an organic modification, of an unknown nature. It seems in general, easy to appreciate the organic circumstances constituting these predispositions. Every one knows that the systems and apparatus, whose action preponderates in the economy, are those most frequently diseased. Thus the great development of the sanguine system predisposes to inflammations; that of the lymphatic system to sub-inflammations: nervous system to nervous diseases; of the digestive apparatus, to hepatitis, gastritis, &c. It is evident then, that the predisposition to many disorders, exists in the general or partial predominance of the different organic systems and apparatuses. M. Maréchal acknowledges himself that those organs which receive a great many nerves, sanguine and lymphatic vessels, which consequently possess a high degree of sensibility, and are susceptible of becoming easily engorged, are the most exposed to cancers. Such are the different parts of the face, particularly the lips, nose, eye-lids, mammæ, neck of the uterus, testicle, glans penis, rectum, cardia, pylorus, and the ileo-cæcal valve. It is also remarkable, that whilst these parts are the most sensible, they are most exposed to the action of irritating causes.

We cannot conceive how a tissue, after undergoing a transformation in texture can return to its primitive state, and this is one of the strong arguments of the partisans of its incurability. If we oppose to them the great number of cases of cancer cured by the antiphlogistic method and collected from the origin of the physiological doctrine, they answer, that physicians are not certain of having cured a scirrhus tumour, that dissection alone can establish their true nature. M. Maréchal observes on this subject, that the organization of the tumours which have been cured, must have been like those which have been extirpated, and in which scirrhus or encephaloid tissues, have been found, since these diseases were developed under similar circumstances, had run the same course and presented characters perfectly identical. He might have added, that if, by this strange manner of reasoning, they wish to invalidate the proofs drawn from analogy, the diagnosis of the greater number of diseases, of all that cannot be estab-



lished *de visu*, can no longer be established ; the physician will then be almost always condemned to inaction, for he will be obliged to await the *post mortem* examination to recognize an apoplexy, a pleurisy, a pneumonia, or a peritonitis, for fear of being imposed on by false appearances. But how can these fatalists object to the cures of cancerous ulcers and ulcerated scirrhus ? They will be obliged to acknowledge that such mistakes are impossible for any man who has seen much of disease. We will give here the answer made by M. Begin to the objection we refute. "We cannot see why," says he, "they admit the spontaneous formation of scirrhus tumours, against all reason, whilst they refuse to admit on the same authority, their disappearance. If they spring up without our knowing from whence they come, they should also be able to disappear without our explaining where they go."

Not only the cure of ulcerated cancers, demonstrates the possibility of the resolution of cancerous tissues, but we can give direct proofs of it. M. Maréchal brings to mind the cases 14 and 15, where a complication produced death, at a period when the carcinomatous parts had changed character and were progressing towards cicatrization ; the dissection did not show any longer a trace of cancerous disorganization, in the points which had changed their aspect before death, whilst the others were composed of scirrhus tissues ; we can then, no longer doubt the possibility of the resolution of the latter.

After the facts reported by him, M. Maréchal establishes, that the most efficacious treatment against cancer, is that which calms the local irritation and diminishes the general erethismus ordinarily observed in this disease. To this effect are employed sanguine evacuations, emollient and narcotic poultices, baths, diet, and diluent drinks. He discusses very well the rules to be followed in employing each of these means. Not to weaken the interest presented by these considerations, we will let him speak for himself.

"Sanguine evacuations have the advantage of disgorging the capillary system of the affected part ; but we should not act as in an acute inflammation. In the latter the engorgement is recent ; there is no change of tissue ; we may hope to cut short, by one or two bleedings, a sanguine afflux not established in a permanent manner. In cancer, on the contrary, there is a profound alteration of the inflamed tissues, a

continual afflux towards the affected organ ; it is never necessary to employ general bleeding ; but we should draw blood by leeches, little at a time, in order to leave nature force sufficient to effect the disgorgement, and to husband the means of repeating these evacuations, when the afflux is re-produced.\* As the bites of the leeches augment the local irritation we should always have the precaution to apply them at some distance from the tumour or ulcer, and to cover them with poultices, which have also the advantage of favoring the flow of blood. The diseased part also, should be constantly covered with emollient poultices, renewed several times a day ; they relax the inflamed tissues and calm irritation ; they may be rendered narcotic, when the local pains are very severe. Narcotics, internally, are equally indicated, if the pains become general and violent ; baths also, administered from time to time, are productive of very satisfactory results ; they calm the general erethismus kept up by this kind of inflammation peculiar to cancer.

“What hastens most the effect of the remedies we have pointed out, is a rigid diet which facilitates the disgorgement of the parts by augmenting the activity of the absorbent vessels. In depriving them of the fluids of digestion, we force them to draw from all parts of the body, materials proper to repair the losses of the blood ; they take up then, not only those held, by the economy, in reserve, as the fat, the serosity of the cellular tissue, but they likewise devour the tumour itself. It is thus we can explain the success of Pouteau, who only suffered his patient to take ice-water for several months.†

“When leeches, emollients, and diet have diminished the general susceptibility, and local irritation, we may have re-

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\* It is on the execution of this precept that depends, in a great measure, success ; the bleedings must be small, but often repeated.

† It is doubtful whether we shall adopt the explanations given by M. Maréchal of the influence of diet over the cure of cancer ; this physician did not seem to be acquainted with gastro-enteritis : he is ignorant that it comes on and continues constantly, when there exists a chronic inflammation, an ulcer as painful as that bearing the name of cancer, in any part whatever of the economy ; and that if gastro-enteritis is provoked by the sympathies which this irritation excites, the latter is in turn influenced by the inflamed digestive mucous membrane. We know that ulcers soon become more painful, and suppurate more, when the patient has taken a greater quantity of food than usual, and we see these lesions ameliorate and heal under the influence of diet, whilst the existence of gastro-enteritis would eternalize them, if we may use the expression. These ulcers are then under a very close dependence on this inflammation.—*Author.*

course to derivative means, which keep up a determination towards a point different from the one where it has constantly a tendency to fall. Purgatives have the double advantage of acting as irritants on an extended surface and of producing abundant evacuations ; setons, cauterics, moxas, &c. may be employed at the same time ; they act on a circumscribed surface, but in a permanent manner. The only precaution necessary, is to avoid using them as long as the phenomena of inflammation persist in a high degree and not to apply them too near the affected part."

M. Maréchal remarks, that if the cancerous affection is a sequel of syphilis, it is necessary to combine with the preceding treatment, the employment of the means used against this disease ; but, after the justness of the opinions often manifested by this physician in his thesis, we see him, with astonishment give the same precept for herpes and scrofulous affections. Does he see any thing *specific* in these two diseases, and does he think that we can oppose to them a peculiar curative method, as is done in syphilis ? "Perhaps," adds he, "by following such a course, by overcoming the inflammation which has favored the development of the heterogeneous tissues, it will often be possible to remove these new organs. If, however, this treatment sometimes fails, and we are obliged to have recourse to an operation, we think that it will at least, have the advantage of favoring success, by diminishing the susceptibility of patients.—We are moreover, firmly persuaded, that cancerous affections will become more rare, when we have other ideas on their nature and etiology ; when in place of treating by stimulants and repercussives, simple chronic inflammations, which by terminating in induration, become a new source of irritation, to the parts, in the middle of which they are found, we shall destroy this irritation in the part where it has fixed its seat, and shall combat it until its entire extinction."

After having considered the local phenomena of acute and chronic inflammations and sub-inflammations, we should turn our attention to the two other forms assumable by irritation—hemorrhages and neuroses. We do not find in any thesis an exposition of the physiological doctrine on these two modes of irritation ; but we will present them here summarily, in order to fill up this void.

The theory of hemorrhages, is one on which pathological

physiology has thrown the most light. Not knowing that the blood may be furnished by exhalation, physicians, since Hippocrates, have attributed its flow to the rupture of vessels. Morgagni, and more recently Bichat, by examining the mucous membranes which have been the seats of hemorrhages, have done justice to this error. The other opinions admitted on the morbid condition of the tissues exhaling blood, have been by no means satisfactory. In short, hemorrhages were successively attributed by the animists to a salutary effort of nature; by the mechanicians to inertia of the capillaries, whose resistance had been overcome by the too energetic action of the heart; by the humorists to the alteration and extreme fluidity of the blood. Stahl first recognized the true nature of hemorrhages, by considering all sanguine exhalations as active, and giving the name of *passive* to traumatic hemorrhages alone. But soon, Brown—the erroneous principles of whose doctrine induced him to see only debility in nearly all diseases—pretended that all hemorrhages were asthenic, that they were the result of too feeble tension of the vessels, of the gaping of their extremities, and of the penury of the blood. M. Pinel, observing that hemorrhages are sometimes preceded by general and local phenomena of excitation, and at other times not, admits that hemorrhages were produced by two different modifications of the parts, excitement, and asthenia; he divided consequently, hemorrhages into active and passive. M. Broussais has combatted this theory and has sustained that all hemorrhages result from irritation of the sanguine capillaries, and that consequently they are all active, whatever be the debility of the patient; it is easy to show the exactitude of this opinion.

It is remarkable that on the presence or absence of the *molimen hemorrhagicum* exclusively, the ideas of acuteness and passiveness of sanguine exhalations have been established. If the celebrated author of the *Nosographie philosophique*, has rejected what in the opinion of Brown, is too evidently erroneous, he has sacrificed, notwithstanding, to the principle of the *unity and indivisibility of incitation*, by admitting the passiveness of hemorrhages in debilitated individuals. But cannot the most intense irritations come on in the most debilitated subjects, as well as in those possessing the greatest force? Do we not know also that they do not always excite sympathetic phenomena; if then the most profound debility



does not prevent the development of an inflammation, and if inflammations may in a great number of cases, arrive at a high degree of intensity, and at the same time only develop symptoms so obscure as to pass unnoticed, can we not conceive that the same may happen in hemorrhagic irritation which is always marked by a less intense exaltation of vitality than that constituting inflammation? Moreover in an individual not already debilitated, the hemorrhage will be preceded by a pricking sensation, heat and heaviness in the part, by shiverings, small contracted pulse, soon followed by general heat and a large, hard, bounding pulse; whilst in subjects weak and not irritable, the local phenomena of irritation will be less marked, and the general symptoms will be entirely wanting. But in the latter case even, the part will always be redder, warmer, and the patient will always feel pricking and heaviness. The local disposition then is always the same in hemorrhages; the intensity only of the irritation varies, and consequently that of the general phenomena, which are always subordinate to individual sensibility. The absence of the *molimen hemorrhagicum*, is not then sufficient to establish the passiveness of sanguine discharges. If it be true that the asthenia of a part produces hemorrhages in it, those possessed of the least vitality ought to be thus affected more frequently than others; but this is far from being the case. Look at the members withered by paralysis or old age; are their pallid, unirritable, languishing tissues ever the seat of sanguine congestion? So far from producing these, sedative agents, cold for example, by diminishing the irritability of the parts on which they are applied, make them become pale, by preventing the blood from entering in such large quantities. The asthenia of the tissues cannot give rise to a sanguine afflux; we cannot pretend then that the debilitated capillaries suffer themselves to be distended by the blood, and that then their orifices give passage to it; passive hemorrhages therefore are impossible.

Since they admit active hemorrhages, how can they also admit passive ones? as if an identical effect could be produced by two organic dispositions diametrically opposite.—Notwithstanding, however, the contradiction apparently implied by these two opinions we would be obliged to admit both, if they were equally well demonstrated. But we have seen that the passiveness of sanguine exhalations was a supposition; that it reposed absolutely on nothing, since the



only argument given in support of this theory, is without any value.

When an individual who presents all the phenomena of *molimen hemorrhagicum* has lost a great deal of blood, these disappear entirely and the hemorrhage often still continues. It is necessary then to admit that the hemorrhage, at first active, is become passive by the loss of forces in the patient. But how can we conceive that a complete change takes place in the organic disposition of the part, that its irritation makes room for its asthenia, and that the consequences of these two opposite lesions are always the same. But we have already seen that the local phenomena are always identical, that the part is always more red and warm, that they exist only in a less marked degree.

We see often in the mucous membranes, hemorrhages alternating with inflammation : that is to say, the symptoms of the latter disappear when the sanguine exhalation comes on, and show themselves again when the hemorrhage ceases. Thus it is not rare to see a hæmoptysis subside, at the same time when a more violent cough and the development of fever announce that the irritation of the mucous membrane has passed to a more elevated grade. But these phenomena are seen as well in weak as in strong individuals, in those affected with hemorrhages reputed passive, as well as in those who offer the phenomena of excitation ; and would it not be absurd to maintain in the first instance, the passiveness of the hemorrhage ? for this would be asserting that the same tissue may pass rapidly from asthenia to inflammation, and from the latter to debility.

The effects of tonics and astringents in the treatment of certain hemorrhages has also been a reason for attributing them to asthenia. But do not these substances often produce the same results in inflammations ? Do we not see ophthalmias, gonorrhœas, even in their acute stages, leucorrhœa and chronic colitis yield to the employment of astringents ? When sanguine irritations are light, they produce a constriction of the capillary vessels, and consequently prevent congestion. When on the contrary, the irritation is high, astringents almost always exasperate it. The same thing happens in hemorrhagic irritations ; if intense and accompanied by reaction, they are not arrested by astringents, or at least very rarely ; in cases of a contrary character they often succeed. We farther remark that in many circum-

stances, astringents only remedy hemorrhages by adding to the irritation which determined them, and by making the hemorrhagic irritation pass to the inflammatory stage. The effects of astringents prove nothing then in favor of the passive nature of hemorrhages ; besides we know that cold, though a sedative, arrests the sanguine flow, as well in feeble as in strong individuals.

We see often the application of a blister on the chest or thighs, or a sinapism to the feet arrest hæmoptyses, menorrhagias and epistaxes, presenting the strongest characteristics of passiveness. This fact would suffice of itself to prove that all hemorrhages are the result of irritation ; for revulsives cannot restore its habitual vitality to a distant part, plunged in asthenia, it is evident that they can modify only the action of the parts irritated. It cannot be objected that revulsives relieve passive hemorrhages by preventing the blood from flowing in such great quantities to the tissues in which they are seated. This error has been exploded in our day, and we know well that it is not by the abstraction of the fluid from the irritated part, that revulsion acts. Besides, irritants applied on a distant point will not prevent entirely the blood from penetrating the tissue supposed to be affected with asthenia. Why then does not the blood still contained in the capillary vessels, escape, since they no longer vibrate, and their orifices are gaping ?

The hemorrhages, echymoses and petechiæ, seen in *fevers of bad character*, (gastro-enterites with adynamic and ataxic symptoms,) are regarded as essentially passive hemorrhages ; but if these phenomena are the result of asthenia ; why, as M. Broussais has observed, do they not always appear in the last moments of life, when debility is extreme ? On the contrary the petechiæ, become pale at the instant of dissolution, the fluids are concentrated in the irritated viscera and seem to abandon the external capillaries. We observe these hemorrhages during the time of the highest excitement, when the action of the capillary system is most exalted ; and we see them disappear at the termination of the disease, when the sum of the forces is much inferior to what it was in the beginning. They cannot then be produced by asthenia. However, M. Broussais does not expl- in the local organic cause which produce these phenomena, but he regards them always as a sympathetic affect of the irritation that then affects the viscera.

Scorbutic hemorrhages and petechiæ are the last refuge of the partisans of passive hemorrhages. It is very true that the debility of muscular power is one of the principal characters of scurvy; but it is impossible to pretend that debility alone can produce this disease. We see every day individuals exhausted by chronic diseases, by defective alimentation, by excessive evacuations, &c. who are not scorbutic; and if we consider the nature of the causes of this affection, we see that it appertains most frequently to debilitating influences, and we know, moreover, that scorbutics are much oftener cured by the use of vegetables and acidulated fruits than tonics. There evidently exists in this affection an alteration of the humors, a change in the composition of the blood, and consequently a depravation of nutrition, and an alteration of the fibrine and gelatine. If the structure of the tissues be changed, if the blood no longer possess the same properties as in the normal state, the action of the capillaries must also be changed. We can form no conclusion then from the extravasation of blood in the *areolæ* of the cellular tissue in scorbutics, favourable to the passiveness of hemorrhages; and we cannot say that the organic disposition which gives rise to them in this disease is asthenia, since we have seen that in all other circumstances, sanguine exhalations cannot be the result of debility.

Let us farther observe that Scorbutics affected with inflammations, may be also effected with hemorrhagic irritations; for the alteration have undergone by their tissues, has not made them lose their aptitude to irritation; for the *hot scurvy*, viz. that accompanied by thirst, frequency of pulse, heat of skin, &c. is complicated with inflammation somewhere; and the division of scurvy into hot and cold is very correct. Scorbutics then may be affected with the hemorrhagic irritation like other individuals; but this does not exclude hemorrhages resulting from an alteration of the blood and of nutrition, and which take place even, rather in the substance of the tissues than at the surface of the mucous membranes.

We have already said that we do not find in any thesis a history of nervous irritation; we proceed to confine ourselves as we have just done in hemorrhages, to indicating on what principles this subject ought to be considered.

As M. M. Broussais and Lobstein remark, nervous irritation preceeds always the fluxion determined by the stimulation of a part; that is to say, before the capillary vessels

become affected, and the congestion takes place, the nervous capillaries are already irritated : the irritation then extends to the vessels, and it is not till then that exhalation takes place. We have before said that the irritation may remain concentrated during a considerable time in the nerves without the phenomena of inflammation being developed ; but if the nervous irritation is high, the sympathies may already be put in play, and we have before observed that they may excite in the viscera, disturbances sufficiently grave to produce the death of the patient, before phlogosis be established in the irritated part. Since all the phenomena of irritations commence by that of the nervous capillaries, the latter cannot exact a separate study. It is necessary then in limiting the value of this expression, only to understand by nervous irritations, those not accompanied by an apparent afflux. These are the lesions called by M. Broussais, *active neuroses*, in opposition to the diseases resulting from the extinction or diminution of sensibility and *myotility*, and which he designates under the name of *passive neuroses*. The phenomena of active neuroses and the mechanism of their production varying in different parts of the nervous system we may establish between them the following divisions :

1st. Nervous irritations of the internal sensitive apparatus, (the brain.) We ought to refer to them, hemiplegia, paraplegia, clonus hystericus, and a great number of the phenomena of mania and hypochondria, &c. They are primitive or sympathetic of a nervous or sanguine irritation of other viscera.

2d. These of the external sensitive apparatus (spinal marrow and the nerves arising from it.) In the nervous cords they may be primitive ; such are the greater number of neuralgias produced by cold, punctures, &c. They may be the consequence of a lesion of the brain or spinal marrow ; of their inflammation, for example. Finally, they are more frequently sympathetic of some visceral inflammation. In this case the stimulation is first felt by the brain, and from thence scattered through the nerves.

3d. Irritations of the nervous apparatus of organic life.— These constitute the neuroses of authors : certain fleeting dyspnoeas, certain coughs concomitants of irritation of the stomach, the convulsive movements of the heart, spasms of the œsophagus, of the intestines, hysteria, nymphomania, &c. Very often these neuroses excite sympathies which



are reflected on the brain and nerves of relation. M. Broussais has very much reduced the number of them, in showing, by the examination of the causes, phenomena, *post mortem* appearances, and the effects of treatment, that a crowd of visceral irritations regarded as nervous, and to which they oppose stimulants of every kind, under the name of antispasmodics, were only chronic phlegmasiæ ; such are principally the greater number of *neuroses of the stomach*; bulimia, cardialgia, dyspepsia, pyrosis, hypochondria, &c.—Hypochondria is always the result of a chronic gastro-enteritis, in an individual of a nervous temperament, in whom consequently the sympathetic irritations concentrate in the nervous system. They had already observed at the opening of the bodies of hypochondriacs, diseases of the liver, cancers of the stomach, *obstructions*, &c. ; they have also said that these lesions may produce hypochondria ; but they did not the less on this account continue to regard this disease as essentially nervous. The neuroses of the respiratory organs also, have latterly have been very much curtailed in number. After having always met diseases of the heart, of the aorta or lungs in the dead bodies of asthmatics, M. Rostan has called in question the existence of essential asthma, and M. Pinel himself no longer sees in angina pectoris, any thing more than a symptom of some organic lesion.

Finally, we see that the nervous irritations, which succeed at first to the action of stimulating modifiers, continue rarely without affecting the capillary vessels and giving rise to phlogosis ; that the neuroses are not in general primitive except in the expansion of the nerves ; that the greater number of nervous irritation, seated in the sensitive center and the nerves, take their origin in sanguine or nervous irritations of some part ; that a great number in short, of the diseases reputed nervous, are only the phenomena of acute or chronic inflammation.



## CHAPTER III.

## SYMPATHETIC PHENOMENA OF IRRITATIONS.

The study of the sympathetic phenomena arising from irritations, constitutes one of the most important parts of pathological physiology. Without a profound knowledge of the relations existing between the modifications of the action of the different organs in a state of health and disease, it is impossible for us to progress in etiology and symptomatology, or to establish the principles of therapeutics on a solid basis : it is by the aid of these that we are able to appreciate the relation existing between the causes of these diseases and their phenomena and the different effects of the action of the same cause on the different organs. The study of the sympathies, joined to that of pathological anatomy, has permitted us to arrive at the knowledge of the true nature of diseases, by making us refer the symptoms to the lesions of organs, and by making us distinguish the primitive affections, the source of all disorders, from those sympathetically excited in other parts ; this has unveiled to us the phenomena of metastasés and crises ; in short, it is on a knowledge of the sympathies that we often establish our principal curative indications.

We are indebted to M. Moncamp for an excellent treatise on the sympathies ; he has enriched it with a number of remarkable facts, of judicious reflections and of physiological principles drawn from the new medical doctrine, whose author he has sometimes forgotten to name. We may also reproach this little book with some blemishes, marked by the sacrifices sometimes made by M. Moncamp to opinions, the errors of which no one can know better than himself.—Nevertheless, this treatise will be read with a great deal of interest, and we think it our duty to present here a full analysis of it.

This physician seems to us to have given a correct definition of the sympathies, when he says, that they consist in the union, the agreement and correspondence existing amongst all the parts of the body, and which are the cause that when a modification takes place in one portion of the economy, another similar one supervenes in one or several parts situated at a greater or less distance. What is the means of sympathetic communication of the different organs with one another ? Most of the moderns since Vieussens and Willis, attribute it to the nerves, and M. Broussais agrees in the

opinion. According to him, the transmission of irritation takes place in the same manner as that of excitation in a state of health. Many physiologists have denied that the nerves are the agents of the sympathies: but the objections presented by them, and which M. Moncamp has related in his thesis, are far from being satisfactory; and Whitt, to whom is due the greater part of them, has fallen into an evident contradiction, in saying it is the *sensorium commune* that establishes the sympathetic union of organs amongst each other. It is evident, if this be the case, that the nerves bring the impression to the brain, and that it is by the nerves also it is transmitted to the other organs. How does it happen, says M. Moncamp, that the parts not receiving the same nerves, can sympathize? Such, adds he, is the disturbance of vision supervening during bad digestion, though there is no communication between the nerves of the stomach and optic nerves. There is here an anatomical error which will be corrected by all those acquainted with the distribution of the filaments of the ophthalmic ganglion and those of the great sympathetic accompanying the ophthalmic artery. Although the fibrous tissue does not contain nerves, objects M. Moncamp, when inflamed, a crowd of sympathies are developed; but if this was the case, we would not produce pain by twisting the articular ligaments, as we see happens in the experiments of Bichat. M. Moncamp contends that we are mistaken in attributing the transmission of the sympathies to one system alone, since they are attributable, says he, to the relation uniting all the organs; it is their reciprocal correspondence which constitutes them, and they should be referred to all the parts at the same time. But by what is established this relation, this correspondence: to this the question is reduced; and in attempting to resolve it, M. Moncamp has only translated it into other terms.

Are not the sympathies manifested during diseases merely an exagération of those existing during health, or are the phenomena peculiar to the diseased condition, unnatural developments of the vital properties, as Bichat says? M. Moncamp justly observes, that it would be erroneous to admit exclusively, either of these opinions, since they are both true. Thus the encephalic irritation determined by gastro-enteritis, manifested by pain in the head, coma, delirium &c. is here only an exagération of the *consensus* of action uniting the brain and stomach, in health. In the inflamma-

tion of the latter, the skin is dry and becomes humid when the disease terminates ; the same thing is seen during digestion. On the other hand, we observe during diseases, sympathies between organs that, in a state of health, seem to have no relations : it is thus we see vomitings come on during nephritis, and during the operation for cataract, &c. but we must confess that it is perhaps, on account of the little knowledge at present possessed by us of the relations existing amongst all the parts, which makes us regard these phenomena as anomalies.

Tissot incorrectly distinguishes the sympathies into *active* and *passive* : if a metritis, for example, produced vomiting, he said that the uterus was the seat of the active sympathy, and the stomach that of the passive ; but evidently a sympathy is composed of two things—1st, of a modification in the action of an organ ; 2d, of the modification of that of one or several others, determined by the first. This false division arises from the distinction already made of *sympathy*, from *sympathetic phenomena* ; the first expression corresponds to the active sympathy of Tissot, and the second to passive sympathy. But still, sympathy is only constituted by the simultaneousness of affections of two, or a greater number of parts.

M. Moncamp rejects also the division of sympathies into those of *contiguity* and *continuity*. In fact, it is not proved that the continuity of tissues has a great influence over the sympathetic transmission of irritation. The different parts of the digestive mucous membrane, sympathize less with one another than with the skin ; and the experiment of Bichat is well known, who after having cut transversely the œsophagus, saw tickling of the fauces produce vomiting. The admission of the sympathies of contiguity does not seem to be better grounded : who would maintain, for instance, that there is not direct propagation of irritation, by means of the continuity of the cellular tissue, in the peritonitis produced by cystitis, metritis, &c.

Bichat has classed the sympathies according to the nature of the vital properties brought into play ; but the correctness of this division is subordinate to that of the admission of several vital properties, and if the greater part of those admitted by the author of the *Anatomie générale*, are only functional results of the action of the organs, it is evident that the distinction of sympathies into those of sensibility, and con-

tractility, &c. is purely abstract ; besides it is sterile, for it cannot serve to establish any principle, any law on the exercise of the sympathies. In effect, the disturbance of the sensibility or contractility of relation of an organ, excites just as well in another organ a disturbance of organic sensibility or contractility, as that of animal sensibility or contractility ; and *vice versa*. Moreover, as observes M. Moncamp, in a disturbance where several properties are put in play, how will you class these sympathies of vital properties ? Such would be the excretion of urine, which exacts on one part from the bladder the development of organic contractility, and from the abdominal muscles that of animal contractility. The same may be said of the division of sympathetic phenomena, into organic sympathies and those of relation, admitted by M. Broussais, and not spoken of by M. Moncamp. This also is entirely abstract, since the phenomena of relation are only functional results, and because, in all cases it is not the disturbances of the functions of relation which are transmitted, but those of the organic phenomena ; from whence a change may follow in the phenomena of relation, if the organs whose actions are modified are charged with the execution of the latter. The author of the *Examen*, also says himself, that the sympathies of relation never exist without the organic sympathies, whilst the latter may exist without the former. But evidently M. Broussais has only established this distinction to avoid the circumlocution of language necessary to express that the irritation of such an organ has produced such a disturbance in another.

All parts of the body are united by sympathies, but these are more or less strict between the different organs. In general, those fulfilling the most important functions of the economy, are also those amongst which we see the most intimate connexions ; such are the brain and the stomach. The number and intensity of sympathies developed by an irritated organ, are subordinate to several circumstances, which are relative to the importance and sensibility of the organ affected, to the degree of its irritaion, its duration and to the individual constitution.

The digestive mucous membrane, the brain, the lungs, the skin, and the heart, are the organs that provoke and receive the most sympathies ; one amongst them cannot be irritated to a high degree, without the whole economy per-



ceives it immediately, and the sympathetic disturbances are not proportioned to the pain accompanying the irritation; for gastro-enteritis provokes many sympathies and is rarely itself accompanied by pain; and on the other hand rheumatism, though very painful, often causes no fever, nor any other sympathetic disturbance.

The intensity of the irritation determines also that of the sympathies, and these give ordinarily the measure of the degree of the first: thus it is principally by the violence of the fever we judge of that of the gastro-enteritis, pleurisy, pneumonia, &c. But according to the judicious observation of M. Moncamp, it often happens when an inflammation is very intense and affects a large surface, that the action of all the organs seem to be chained, that all the forces seem concentrated on the diseased part, and that there exists few sympathies. Under these circumstances, bleed the patient, and you will soon see them developed with activity; you will be tempted to think that the intensity of the inflammation has augmented, whilst it has actually diminished. To this influence of the degree of the irritation on the sympathies, M. Moncamp should have added that exercised by its antiquity. In general inflammation is accompanied by general disturbances, more strongly marked in proportion as it is near the period of its birth; in the long run the sympathies wear out, as it were, whether because the irritation less intense, provokes them more feebly, or because the sympathetic stimulation is no longer so vividly felt by the parts to which it is transmitted for a long time. A great number of chronic phlegmasiæ present no other symptoms than their local phenomena and this is one of the principal causes of the obscurity of their diagnosis. The *silence* of the sympathies is prolonged sometimes until the period of the disorganization of the irritated tissue; they are then awakened and put in play with greater or less activity.

The constitution of the individual is one of the circumstances which exercises the most marked influence over the development of the sympathies: we observe that it is in general in direct ratio with the sensibility. In individuals of an irritable constitution we see the slightest irritation, particularly when it effects an important organ, excite a crowd of sympathetic disturbances. On the contrary, in robust individuals, and still more in those of a lymphatic temperament, and full habit, the most serious inflammations



often limit their phenomena to the affected organ ; and it is as much perhaps on account of the obscurity of the diagnosis in their diseases, which do not admit of active treatment, as of the facility with which sub-inflammations are established in them, that they are affected with so great a number of chronic phlegmasiæ.

For the same reason the development of sympathies is subordinate also to the age and sex of individuals, and to the climate they inhabit. Women and children generally having the most irritability, greater nervous mobility, as we say, present in the irritations that affect them, a crowd of sympathies ; and in this respect old men, approach, on the contrary, the lymphatic temperament. Climate, which modifies in a remarkable manner individual constitutions, ought to produce the same results. A foreign body introduced into the foot of a negro, the impression of cold air on a negro child is sufficient to produce tetanus, while it would very rarely be produced by the same causes in the inhabitants of Russia. Besides these general influences M. Moncamp points out several particular circumstances that modify the development of the sympathies : thus the irritation of the same part, according to the mode in which it exists, and according as it is determined by different causes, will produce different effects on the other organs. Thus, if the pharynx be irritated by a feather, vomiting will be produced, but this is not observed in pharyngitis ; titillation of the bottom of a healthy foot will produce laughing, and after a time convulsions ; if we tickle this part when inflamed we only produce pain.

“Pathological sympathies may take place, in the physiological state, says M. Moncamp. Such is the vomiting and even syncope, often produced by the sight of a disgusting object.” This reflection seems to us a mere subtilty, for every notable disturbance in health is pathological, and the first morbid phenomena, evidently arise always in the physiological state.

After showing the most important and irritable organs to be those which develope the most sympathies, M. Moncamp ought also to have remarked that they are also those which receive most. Thus we see the digestive mucous membrane affected in almost all acute irritations : the same thing happens in organs affected with chronic irritations. But we have already anticipated these facts by saying farther back,

that the organs possessed of the most excitability, and those already irritated, are more disposed than the others to receive an increase of irritation.

The parts affected with a sympathetic irritation, develop in their turn sympathies, which are reflected on the part primitively affected, and which thus add to the intensity of the irritation in the latter. Let an erysipelas, for example, be developed under the influence of a gastro-enteritis; if the cutaneous inflammation is intense, we shall soon see that of the mucous membrane become more grave, so that the two inflammations, influencing each other reciprocally, will add violence to each other. One of the two, however, ordinarily takes precedence, and continues its march after the termination of the other.

Let us now study with M. Moncamp the part played by the sympathies, in the production of diseases, and let us inquire what influence a thorough knowledge of them may have over the diagnosis and treatment of the latter.

#### *Of the sympathies in relation to etiology.*

We have seen, when speaking of the causes of irritation, that often it was not the result of the direct action of stimulants on the part affected, but the result of the transmission of *superexcitation* from this point to another, that in other cases the *debilitation* experienced by an organ, under the action of sedative agents, excited an irritation in another organ whose inverse functions for the energy of those of the first, were obliged to supply the activity of these last. Such are the augmentation of the pulmonary perspiration, of the exhalation from the mucous membrane of the large intestine, of the secretion of urine, determined by the diminution of the action of the skin, under the influence of cold, which cannot take place without a previous exaggeration of the vitality of these tissues; an exaggeration which may be carried to the degree of irritation. From whence result, as we have already remarked, two opposite modes of association between the organs; in the first, the modification experienced by one is felt by the other; thus the irritations of the mucous membrane of the stomach and small intestines affect the skin and brain, and *vice versa*. In the second, on the contrary, the modifications experienced by one organ, are in an inverse ratio to that felt by the other: in other words, the irritation of one part produces in certain cases that of another, and at other times throws it into a state of asthenia.

Sympathetic irritation must be at a certain height to constitute a secondary disease : in other cases, the disturbances by which it is manifested are only considered as symptoms. Thus we would not give the name *disease*, to the stimulation of the heart, produced by any inflammation, which modifies its action, with more reason, than to the augmentation of the heat of the skin in a case of gastro-enteritis ; but if this sympathetic stimulation produces an afflux of fluids, in the part it affects there will be a real inflammation.

We should not consider as sympathetic all the disorders induced by a disease : in other words, we should not, as M. Moncamp has done, confound *symptomatic* affections with those truly sympathetic. Thus the anasarca which supervenes during diseases of the heart, is the consequence of the obstacle which the latter produces in the circulation ; this is no more sympathetic, than the dyspnœa produced by a thoracic affusion ; or than the paralysis caused by compression of the brain, &c.

We may establish as a general principal, that all irritations which are produced directly, may be also sympathetically : let an organ receive the stimulation immediately or mediately, it is always stimulated, and the irritation which it experiences, is always of the same nature in the one case as in the other. Thus when we say, that a meningitis is sympathetic of a gastro-enteritis, we only express a relation of causality ; for the secondary irritation does not differ from that which a blow on the head or the insolation of this part would have produced. This remark is useful to those who seem to distinguish sympathetic from idiopathic diseases, and who are not sufficiently persuaded that though the first, when slight, disappears at the same time with the second, so soon as it has acquired a certain degree of intensity, demands particular attention. This is the practice followed by M. Broussais ; he often remarks, that sympathetic *superexcitations* become sometimes inflammations, more intense than those which have produced them. It is thus that we see a slight traumatic lesion give rise frequently to a serious gastro-enteritis. He observes also, that the secondary irritation persists sometimes after the cure of that which had excited it, as is proved by the encephalic inflammations determined by gastro-enterites, which often continue after the latter have disappeared several days.

The nature of irritation sympathetically transmitted is

the same as that of primitive irritation ; it is always the exaggeration of the phenomena by which life is manifested. In uttering this entirely new proposition, the author of the *Examen* does not mean to say, that a lesion similar to that existing in a part, is repeated in another, with the characters it presents in the first. Thus an irritation with redness, heat and swelling, (inflammation,) may excite in another tissue an irritation with pain, without redness, heat or tumefaction, (nervous.) It is necessary here, carefully to distinguish the *element* of the lesion, the *irritation* from its characters, which depend only on the nature of the tissues affected, and which differ as we have already said, according as it is seated in the red capillaries, in the nervous capillaries, or the white vessels. In short there is not a repetition of the disease but of the irritation, that is to say, of the exaltation of irritability. Thus a suppression of the menses gives rise as frequently to an inflammation as to a hæmoptysis, hæmatemesis, or epistaxis. But an inflammation produces most frequently another inflammation or sub-inflammation, than a hæmorrhage or nervous affection ; and a nervous irritation excites also more particularly disturbances in the nervous system, although it may notwithstanding give rise to an inflammation. Such are the gastrites we see developed under the influence of the acute pains of a neuralgia.

In certain cases irritation is transmitted from one part to another with all the characters which it presented in the first : this tendency to imitation is only presented in the different portions of the same organic system. Such is the repetition of the irritation produced by the kinds of disorganization, called *cancers*, *tubercles*, &c. this is what constitutes the *diatheses* according to M. Broussais.

*The sympathies, in relation to diagnosis.*

All the symptoms of a disease are composed of three orders of phenomena : 1st, The disturbance of the functions of the diseased part : 2d, The sympathetic modifications experienced by one or several others : 3d, a change directly produced sometimes in organs whose action is under the immediate dependence of that which is diseased, (symptomatic lesions.) The signs drawn from the disturbance of functions are, without doubt, those which possess the greatest degree of certainty ; but they are sometimes not very



apparent, and then can be of little importance in enabling us to recognize the disease ; still oftener it happens that the sympathetic disturbances are more appreciable than the lesion giving rise to them. But as M. Moncamp, observes, if we do not know the relations of organs towards each other, if we do not attach great importance to the study of the sympathies, we will be liable to treat for a long time a symptom for the disease. Thus the acute pain of the right shoulder, often accompanying hepatitis, is mistaken for a rheumatism. M. Moncamp cites here a remarkable example of the importance of the study of sympathies, to semeiology. " He who will study well the sympathies, says he, will know that there are few idiopathic head aches ; that those affecting the anterior part of the head are almost all referable to a disturbance of the stomach ; that those affecting the summit or posterior part are most frequently referable to the uterus. With such data we proceed with more confidence in the treatment of the disease."

The principal signs of gastro-enteritis are drawn much more from the sympathetic phenomena, than from the trouble of the digestive functions. Here, in effect, all the local symptoms of inflammation are wanting, and it is the state of the tongue, the heat of the skin, the frequency of the pulse which point out its existence. Who does not know that in this disease we observe frequently an acute pain in the superorbital region, in the muscles and articulations, whilst the epigastric region is hardly ever painful ? When the inflammation is very intense, the prostration of the muscular forces, constitutes the most remarkable phenomena, so much so that they seem to constitute the disease itself. We should not then forget this important truth, that the sympathies predominate so much over the disturbances of the organs, whose lesion produces them, that they mask the latter and cause deception. Such is, as we have just seen, the debility in gastro-enteritis ; such are the nervous disturbances often produced by the presence of worms in the digestive canal, in children. In the inflammations which irritate the heart sympathetically, the febrile phenomena being often more prominent than the other symptoms, is without doubt one of the principal causes of the false ideas held with regard to a great number of these diseases. If the sympathies had been better studied, pathological anatomy would not have remained so long barren, and we would long since have been



able to refer effects to their causes. M. Moncamp undertakes to shew that the nature of *fevers* has been misunderstood until latterly, because physicians have not followed the chain of phenomena from the invasion of the disease to its greatest development; he analyzes in a manner truly physiological, several cases of pretended essential fevers, to prove that the disorders called general, are referable to a principal cause, and that they have been produced the one by the other. Let us follow him in the two cases taken at hazard by him from the *Medicine clinique* of M. Pinel.—  
 “A washerwoman, aged 27 years, of sanguine temperament had a child four months ago. The first day of her sickness she plunged her hands into cold water, which produced a suppression of the menses, and shiverings followed by heat. Second day, violent head ache; face flushed, pulse frequent and soft, perspiration abundant. Third day, return of the menses, and cessation of the febrile symptoms.”

“Every one knows the sympathy existing between the skin and the mucous membranes, and that cold applied to it produces either diarrhœa, catarrh or some other affection. Here it has produced a suppression of the menses; the shiverings are sympathetically produced by the excitation of the uterus. The sympathies of this organ with the head, are remarkable in disorders of menstruation, in hysteria in which is seen the *clavus hystericus*. The head ache is then here dependent on the uterus; so is the flushing of the face, manifested in uterine affections. Next follows the trouble of the circulation, which here depends on the *excitation* of the uterus and the kind of plethora caused by the suppression of the discharge. We follow perfectly the development of all these sympathetic phenomena, and we see that the fever only takes place by the successive development of all the sympathies. An abundant sweat appears; the menstruation is re-established and the fever ceases. Thus we see in the termination of this fever, the sympathetic phenomena recede in the order they arose; the fever then was only sympathetic.

“A servant maid of the *Salpetriere*, aged 17 years, during convalescence from a pulmonary catarrh, indulged her appetite freely; general uneasiness and anorexia soon followed. Several days passed in this manner. On the first day of her disease, she had head ache, shiverings with cardialgia, nausea, heat of skin. thirst and restlessness. The fifth day

she entered the infirmary ; symptoms—shiverings alternating with heat ; during the night intense heat ; pain over the orbits, violent thirst. Sixth day ; face very red, with a yellow tinge ; mouth bitter, tongue covered with a mucous coat ; pain in the epigastrium ; pulse hard and frequent ; limbs painful ; an emetic brought up yellow and green matters ; afternoon paroxysm very strong ; perspiration during the night ; ordered acidulated drink. Eighth day ; paroxysm in the evening ; next day exasperation during the whole day. Tenth day, remission of all the symptoms ; paroxysm at noon ; perspiration ; sleep. Eleventh day ; constipation since the sixth ; abdomen tense and tender to the touch. Thirteenth day ; morning, abundant perspiration ; less head ache and heat of skin , in the evening, shivering ; pungent heat ; thirst followed by sweat ; sleep. Fourteenth, urine copious ; a spontaneous stool ; paroxysm light. Fifteenth ; paleness of face ; tongue moist , pulse supple ; general lassitude ; several stools. Sixteenth, apyrexia ; appetite ; convalescence.

“ It is evident that the cause of all these symptoms has been an excess of aliments ; the stimulant then first acted on the stomach ; the sympathetic phenomena are referable to this first disturbance. The first influence was on the brain, the second on the skin ; but the disturbances seated in these two parts, were not sufficiently intense to cause fever. It is only when we see gastric disorders augment, that the epigastric region is the seat of pain, that fever is developed and is announced by a frequent, hard pulse, and by the affect extended to the organs of locomotion, which is never absent, when the digestive tube is a prey to a high degree of irritation. After the administration of an emetic, all the symptoms augment, the abdomen becomes tense and sensible ; you can no longer doubt that the affection is in the digestive tube, since an excitant taken into the stomach, not only occasions greater sensibility in this part, but augments the other sympathetic disturbances.

“ After all these observations, you cannot say that the fever is essential, since it has been preceded by manifest local disorders, and would have been absent entirely, if the gastric lesion had been of a less degree of intensity. In this case you would only have seen head ache and dryness of the skin, which are the effects of a gastric irritation too slight to call into action the vascular system. In proportion as the

disease declines, you see the sympathetic disorders cease : at first the pain in the head, then the heat of the skin, which becomes covered with perspiration—the most common termination of gastric lesions. Next the pulse becomes supple, tongue moist, and the patient regains his appetite.”

These are models of medical analysis ; and M. Moncamp asserts with reason, that by applying this method to all cases of fever we would discover that the febrile phenomena have only been sympathetic of inflammation. This will be abundantly proved in the history of gastro-enteritis, to which we will attach all that is relative to this subject.

We do not speak here of the sympathies considered in reference to the termination of diseases. M. Moncamp has only pointed out this interesting part of their history ; he has thus left in his thesis a void which will be filled up when we treat of the phenomena of revulsion.

*Of the sympathies, in relation to therapeutics.*

M. Moncamp remarks, that ignorance of the sympathetic connexions of organs with one another and the little attention paid to them, have exercised on therapeutics an influence as injudicious as on etiology and semeiology : it is because physicians were ignorant of the source of the phenomena of most diseases, whose symptoms they have treated for so long a time, and which, in most cases, constitute the disease itself, in the eyes of pathologists. We should not always place the remedy on the part where the pain and other symptoms are manifested, but examine first whether these phenomena are not sympathetic disturbances of another part. Thus before prescribing a pediluvium, bleeding from the neck, &c. for a headache—we should be assured that it is not sympathetic of an irritation of the stomach ; for then we have only to treat the latter to make the first disappear.—Such is the case also with erysipelas, which as soon as cured in one part re-appears in another. Combat the gastro-enteritis, of which it is often sympathetic, by appropriate treatment, and the cutaneous inflammation will cease with it.—How often have we seen in the practice of M. Broussais, acute arthritis disappear in a few hours, by an application of leeches to the epigastrium ; the secondary irritation does not always yield with that which excited it and keeps it up.—We have seen that frequently it becomes independent of the latter ; that it persists sometimes after the disappearance of

the first. It exacts then, particular attention on the part of the physician, who should combat it with as much perseverance and activity as if it was primitive. Thus we should not be contented to attack an exterior irritation, provoked sympathetically by a gastro-enteritis; but we should oppose antiphlogistic remedies to the latter, as well as to the first.

It is also by the way of sympathies that the greater part of therapeutic agents act; it is on a knowledge of these that is founded the employment of the large class of revulsive stimulants, of which we shall speak when we treat of general irritations.

The numerous connexions uniting the stomach to other organs, render it very favorable to the action of many medicines introduced into its cavity, and whose influence extends by the way of sympathies to other parts of the organism. But if we recollect that the greater part of these substances are stimulants, we will see that the greatest caution should be used in their employment internally. The dreadful abuse many physicians make of them, is one of the causes of this crowd of chronic-gastro-enterites, which destroys so great a number of patients.

M. Moncamp sagely counsels us to recur more than is done to the ingestion of medicines into the large intestine, and to the iatroleptic method, particularly for the administration of very active substances. Their effects will be quite as advantageous as if they had been deposited in the stomach, and at the same time they will not have the disadvantage of stimulating this organ and the small intestine. Moreover, it should be remarked, that the effects of these medicines are very often counteracted by the irritated state of the gastro-intestinal mucous membrane. A substance whose effects are ordinarily sedative to certain organs, stimulate them when the stomach is phlogosed; for then, according to the remark of M. Broussais, this viscus excites sympathies which are reflected on the other organs, and especially on those already irritated.

The second part of M. Moncamp's thesis, embraces some considerations on the sympathetic connexions of the digestive mucous membrane with the other organs of the economy. We defer these until we come to the history of gastro-enteritis, to the commencement of which they more properly belong.



We should now examine in a cursory manner, the influence inflammations exercise over the principal organs, or in other words, point out the sympathetic phenomena, common to most of the phlegmasiæ. M. Duponchel, whose thesis we have already cited, has treated this subject with ability; we will relate what he has said on the subject.

We have already seen that in almost all the cases, where an inflammation has reached a certain degree of intensity, it produces sympathetically a stimulation more or less violent in other organs. The gastro-intestinal mucous membrane, the brain, and the heart, are always the first to receive the influence of the inflamed tissues. There soon results from this, a modification of the circulation, a disturbance in the digestive functions, and in the secretions, depression of the muscular forces, wandering pains and a sense of lassitude in all the members; these phenomena constitute the febrile state.

According to M. Broussais, when an organ is sufficiently irritated to excite a fever, it only produces the fever by the united irritation of the heart, gastro-intestinal mucous membrane and brain. This opinion has found many opponents; they ask why the inflammation of any organ whatever, cannot produce a fever by stimulating directly the heart, without exercising any influence on the stomach? We may answer, that the mucous membrane being excessively sensible and irritable, holding the most intimate relations with all the organs, must participate in every sympathetic irritation sufficiently intense to be perceived by the heart. This is also the case with the brain and its membranes, and experience every day demonstrates the truth of this assertion. We never see, in truth, the febrile state without loss of appetite, thirst, alteration of the lingual mucous, &c. in a word, without disturbance of the action of the stomach, at least during the first days existence of fever. After a time, we see also, stimulation of the heart, and as a consequence, acceleration of the circulation, continue, when the irritation of the stomach and brain have ceased; but still the latter has always existed at the commencement in a more or less elevated degree. These facts will be fully set forth when we treat of gastro-enteritis.

Besides the acceleration of the circulation, all the other phenomena of the febrile state, appear to be the result of irritation of the gastro-intestinal mucous membrane, produ-



ced sympathetically by inflammation of other tissues. It is not until its signs (signs of mucous irritation) are manifested, that we see come on the disturbance of the secretions, pains in the limbs, prostration of muscular forces, and heat of the skin. We are, however, far from being ignorant of the connexions which exist between the latter membrane and the other organs, and from pretending that the exaggeration of the heat is exclusively, like the other phenomena of the febrile condition, under the influence of sympathetic gastro-enteritis.

The cerebral irritation which accompanies all intense irritations, limits its effects ordinarily to the production of head ache, and a greater susceptibility of the organs of sense; but often it may be carried so far as to produce encephalitis or meningitis. We observe then, delirium, spasms, subsultus of the tendons, &c. or a comatose state. The encephalic irritation arrives almost always, at this height, when the inflammation exciting it, is sufficiently intense to produce death.

From the stimulation perceived by the heart, results a change in the circulation. The pulse presents different characters according to the seat and degree of the inflammation; in meningitis it is contracted, hard, vibrating, and irregular; in encephalitis it is large, soft, irregular, and frequent when gastric irritation complicates the disease; in pneumonia it is full, large, frequent, and hard; it does not present this character so strongly in pulmonary catarrh, but it is full and soft; in pleurisies it is active, small, and chorded; in pericarditis, and carditis, it is small, frequent, hard, contracted, and often irregular; in inflammation of the cellular tissue of the mediastinum, and in other phlegmons, it is large and full. Gastro-enteritis renders the pulse very frequent, it is at the same time developed during the first days of the disease, in sanguine subjects; later in the disease and in patients of a different constitution, it is hard and concentrated, in proportion to the intensity of the inflammation; besides, the state of the pulse in this affection is very much modified according to the extent and intensity of the inflammation, the sympathetic disturbances, and other circumstances.

In colitis, at the same time that it is frequent, the pulse is more or less diminutive; in hepatitis it is full, hard, and frequent: in peritonitis it is small, contracted and frequent; in

cystitis it is hard and contracted ; in metritis, large and full ; in nephritis, hard, full, and vibrating ; in muscular inflammations, it presents also this last character, and is at the same time full, but not frequent.

The heat of the skin is increased in almost all inflammations, and this modification varies singularly in most of them. In meningitis the skin is dry and burning, in encephalitis it is hot and moist. In the inflammations of the respiratory organs, it is hot and dry if the pleura is inflamed; hot and moist, if it is the parenchyma of the lungs or the mucous membrane of the air tubes. In carditis and pericarditis, it is hot, dry, and red ; in gastro-enteritis, the heat of the skin is dry, pungent, and sometimes moist at the end of exacerbations—inflammations confined to the colon have no marked action on the skin. In hepatitis, it is dry, more or less yellow, and produces the sensation of pungent heat. Inflammation of the other abdominal viscera, do not act in a particular manner on the skin ; in all it is more or less warm and dry, according to the severity of the disease. In articular inflammations, it becomes covered, say some authors, with a sort of fatty coat, which results from an augmentation of the secretion of the sebaceous follicles. In phlegmon, the skin is moist and red, and the heat halituous.

After having seen the influence which the sympathies exercise over the development of diseases, and the production of their symptoms, let us examine the part which they play in the termination of diseases.

We have seen in the examination of M. Moncamp's thesis, that physiological medicine has added considerably to our knowledge on the sympathies, and that he had made applications of it, to the various parts of pathology, fertile in precious results. We must yet study several phenomena of diseases on which a knowledge of the sympathies has thrown the greatest light ; we wish to speak of those appertaining to revulsion, which we should attach to the history of the sympathies, since it is the consequence of the relations existing between the actions of the different parts of the organism. I made revulsion the subject of my inaugural dissertation ; and assured of the correctness of the principles which I have drawn from the splendid lessons of the professor of the Val-de-Grâce, I think it may not be improper to repeat them here.

The greater or less exercise of the excitability constitutes

the strength or feebleness of the organs ; unequally distributed to each one of them, according to the part it plays in the economy, it is greater in the soft parts than in the bones, in the mucous than in the fibrous membranes ; from whence it results, that the energy of the action of the different systems, and organic apparatuses, is different in each of them. There is a mutual equilibrium amongst the actions of all these parts, but always in a manner more or less imperfect ; for there is no individual in whom we do not remark a relative preponderance of the action of one or other of these systems. When they are predominant in one apparatus, they are less in one or several others ; and the difference is more marked in proportion as the increase has been more rapid ; from whence it results that force and weakness are very rarely general in the economy, but they are only relative to this or that system. Cabanis compares the cerebral sensibility to a fluid, the total quantity of which is determined, and which every time that it is thrown in greater abundance in one of its canals, diminishes proportionally in the others. We may say the same thing of the forces of the different organs : if their energy augments in one part, it diminishes in another.

“There is neither general nor uniform diminution or exaltation of the vitality of the organs, says M. Broussais.—The exaltation of one or several organic systems, of one or several apparatuses, determines langour in some other system or apparatus. The diminution of the vitality of one system or apparatus, produces often the exaltation of one or several others.” The doctrine of Brown then presents a fundamental error, for a principle contrary to the one we have just set forth, has served as a basis to the school of the Scotch reformer. This inverse relation of forces exists principally between such and such a system ; for example, between the nervous system on one part, and the vascular or muscular or the other ; between the sanguine and muscular systems and the lymphatic system. It exists also particularly between the organs, connected by strict sympathies, and whose functions are in an inverse ratio to each other ; thus between the skin and pulmonary mucous membranes, which is siezed with inflammation when the impression of cold on the former diminishes its action.

Almost all diseases consist, in a loss of equilibrium amongst the forces, and their treatment in its re-establishment.—

These principles being established let us study the phenomena of revulsions.

The natural action of the organized tissues may undergo different modifications; the most frequent is its exagération or *irritation*. This modification of the action of an organ may be transmitted to one or several others, in *consensus* of action with it; this constitutes the sympathies. This transmission takes place to such or such an organ, through preference; from the skin to the digestive mucous membrane, for example: this is what we mean to express when we say, that one part sympathizes particularly with another. It is very remarkable and this observation is of the highest importance, that it is particularly to organs already irritated, the sympathetic irritation is transmitted; because, *the more an organ is irritated, the more susceptible it is of receiving an increase of irritation*. From this principle are deduced consequences very essential in the employment of revulsives.

This sympathetic repetition of the irritation of an organ in another constitutes morbid phenomena in the one it acts on; if it is less strong than the one which has given it birth, it does not arrest the march of the latter, but constitutes its *symptoms*. If, on the contrary, the second is stronger than the first, the latter diminishes or disappears, in pursuance of this great principle avowed by Hippocrates. *De duobus laboribus non in eodem loco simul obortis, vehementior obscurat alterium*. When the secondary irritation produces a cessation of the one which gave it birth, one of these two series of phenomena take place; 1st, either the sympathetic irritation persists and constitutes another disease; this is called *metastasis*; 2d, or, hardly established in another organ, it is there terminated by certain phenomena, which take place in this organ; this has been called *crisis*. But the mode of termination of the primitive irritation is always the same, it is only the results of the secondary irritation, that vary in relation to the organ it affects. The organs sympathetically irritated, says M. Broussais, may contract an irritation in a degree higher than that of the organ to the influence of which they owe it. In this case the disease changes its seat and name; these are *metastases*. If the sympathetic irritations produced by the principal viscera in the secreting and exhalant organs, and in the periphery, become stronger than those of the viscera, the latter are delivered from their irri-



tation, and the disease terminates by a prompt cure ; these are *crises*.

*Metastases* merit then as much the name of *crises* as the phenomena that have received this title; and we should strictly range amongst these last, a cutaneous eruption which terminates a gastro-enteritis, or a meningitis which puts a stop to a pleurisy, &c. as well as a copious flow of urine or an abundant sweat, which relieve the same diseases.

This manner of considering metastases and crises approaches more to the opinion of the ancients, who gave the name of *crisis, judicium*, to every phenomenon producing a notable change in a disease. To us every secondary irritation in an organ, producing a cessation of irritation in another, is a crisis ; we do not see any difference in the various phenomena which may have this result ; they are always irritations, revulsive of another irritation, only these irritations present in the organs in which they are seated different phenomena. Sometimes, indeed they persist, and we see a second disease ; at other times they disappear so promptly, that they are often only appreciable by their effects. This last case happens when the revulsive irritation is established in an organ which may be the seat of an exhalation, or secretion. Then, in effect, the action of its capillary system being augmented, the secretion or exhalation becomes more abundant, and does not permit the accumulation of fluids and the consequent phenomena, such as redness, tumefaction, &c. In a word, phlogosis is prevented ; but if the irritation be too intense, or if it be modified in a manner unknown to us, so that exhalation and secretion do not take place, and the afflux is not destroyed in proportion as the fluid is called to the part, then inflammation is seen to arise. Thus, taking the skin, for example, in place of a sweat, we often see an erysipelas put a stop to a visceral inflammation. In both cases it is a sympathetic irritation which has become revulsive of the primitive one. Some would say that in one case there was metastasis, and in the other a critical discharge ; but the nature of the phenomena is always the same. We will soon return to this subject and speak of several discharges regarded as critical, but not acknowledged by us to be of this character. Art may imitate nature, and produce precisely the same effects we have just pointed out ; that is to say, concentrate the irritation on an organ where it will run through its stages.



or call it to a part where it will terminate rapidly. Thus the inflammation of a viscus may terminate spontaneously by sweat or erysipelas ; and a physician may obtain the same result by applying a blister on the skin or by administering sudorific medicines. All these phenomena are identical ; whether they be spontaneous or be excited by art, they always constitute revulsions.

Revulsion then, is the spontaneous or artificial augmentation of the organic action of a system, of a portion of a system, or of an organ, producing a cessation of that existing in other parts.

What we have said above differs very widely from all that has been written on the displacement of humors in metastases, and on the evacuation of peccant humors in crises ; we think that facts have been badly interpreted, and that practitioners have been deceived by false appearances ; because they were not acquainted with irritation or sympathies ; but this proposition is too important to pass without farther development. In considering them in reference to the phenomena of diseases, we see the discharges which have received the name of critical, present two very different characters. Indeed they are sometimes the cause, and at others the consequence of the termination of the disease in which they appear. We have already established the first proposition by saying that the sympathetic irritation of a secreting or exhaling organ might become stronger than the one giving birth to it, and put an end to the latter, by exciting at the same time a more abundant secretion or exhalation, whose product differs from the natural state, because the natural actions of the organ are modified. In this case, the action of the secreting organ has become revulsive of the inflammation which constituted the disease ; but most frequently things do not appear to pass thus. Indeed we know that the consequence of a pretty acute inflammation is a suspension of the secretions and exhalations ; these functions are only re-established when the phlogosis which had suspended them, ceases ; they are in many cases rapidly re-established, and with an intensity in direct ratio to the suspension they have undergone ; since they return little by little to their natural type. Instead of taking place in a rapid and energetic manner, this re-establishment sometimes comes on gradually and mildly ; they say then that the solution of the disease is operated without crisis. Whoever

has carefully observed in these cases the succession of phenomena, has seen the signs of the inflammation which had suspended the secretions, diminish in a notable manner before the return of the latter. It is not then the action of the secreting or exhaling organ which puts an end to the inflammation, but it is the latter which permits the re-establishment of the secretions. Thus the discharges called *critical* are sometimes the cause and sometimes the effect of the termination of inflammations, and it will be contrary to clinical observation to adopt exclusively either of these opinions.

This manner of considering crises is very different from that commonly adopted ; in the latter indeed, besides their never regarding critical discharges as the consequence of the termination of the disease, they do not allow any influence over this termination to the action of the secreting organ, the elimination of certain morbid principles being regarded as the sole cause of the cessation of the morbid phenomena. We do not pretend that no account should be taken of the evacuation which occurs through the secreting and exhaling organs, which become the seat of the revulsive action ; there are cases where it plays a part in the phenomena observed by us, but in others it has no part.— Thus a pleurisy is cured by an abundant sweat ; it is necessary in this critical phenomenon to consider two things : 1st, the exaltation of the organic properties of the skin, without which there cannot be augmentation of action ; 2d, the spoliation of the mass of fluids by sweat, which acts like a hemorrhage. But let a gastro-enteritis be destroyed by a subcutaneous abscess, all that the physiologist sees here is the revulsive effect of the inflammation, of which the formation of pus is a result.

The partisans of the opinion opposed to the one we sustain, object that we do not see inflammation of the skin, the seat of a critical evacuation which puts an end to a visceral inflammation ; no : but is not the exaltation of the organic properties of a membrane so vast as the skin, sufficient to produce the revulsion of a visceral inflammation ? Now this exaltation of action is satisfactorily demonstrated ; for the function of an organ cannot acquire an increase of energy, unless the properties, which preside over this action, have also acquired more.\* They ask why the product of the

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\* It may be contended perhaps that if in critical phenomena, all is reducible to a revulsive irritation, we ought to see inflammation in the organs in which it supervenes ; but we should observe that there exists two very different

takes place at the close of an articular inflammation, is like critical secretions do not present the same physical properties as in the natural state, whilst it ought only to be more abundant; but is it not the property of irritation of the secreting organs to alter the fluids they elaborate? Thus in ophthalmia the tears irritate the cheeks and they do not produce this effect in the natural state; the nasal mucus which in coryza runs over the superior lip, reddens and inflames it, &c. If the critical discharges evacuate vicious humors, how do they do it by one organ in preference to another?—We admit that it is by a particular sensibility given to it, that each secreting organ elaborates the product of its action; this sensibility then, varies infinitely; for that presiding over the secretion of urine, would not make the organ secrete any other fluid than this, and to eliminate vicious humors the kidneys ought to have other organic properties.—But how can these properties be modified in such a manner that the vessels of the blood separate the principles which alter it? how happens it that these principles present themselves, precisely at the point of the skin where a blister has been applied? what force can draw them here in preference? The partizans of humorism, do not pretend that all diseases are produced by vicious humors; thus they grant us that a robust man, seized with pleurisy in consequence of having passed from a hot to a cold place, has no peccant humors; well! this man, however, may also be cured by a sweat. It is then evident that we should only take account of the revulsive action of the organ which is the seat of the secretion, and that we should only acknowledge a deperdition experienced by the economy; a deperdition whose influence on the diseased organ differs not at all from that of a hemorrhage, bleeding, &c. In short the

modes of irritation in the secreting and exhaling organs; one in which the super-excitation seems limited to the white vessels; then exhalation and secretion are increased; the other, where the irritation affects the red vessels and then the symptoms of inflammation are manifested and the function of the organ suspended: the first seems to be a less degree of super-excitation than the second. Several facts justify this opinion; when the skin is strongly stimulated, during the greatest intensity of an inflammation, it is dry; when the latter decreases and excites sympathies less active, sweats come on. During the first period of a coryza and of pulmonary catarrh, where the irritation is evidently more intense than the second, the secretion of mucus is suspended, and it becomes more abundant during the last stage. The nitrate of potash in a moderate dose, produces a more abundant secretion of urine; in a large dose this substance causes nephritis and the urine is suppressed.

proof of the futility of the assertions of the humorists, is that we only see these critical flows in the vascular irritations ; why do they not take place in other diseases ? otherwise none but inflammations can be produced by peccant humors. But we have considered too long opinions not meriting the attention of criticism ; let others not reproach us with having granted them too much, and for having revived ancient chimeras for the pleasure of combatting them : it would be easy for us to prove that these opinions have still too much credit amongst many distinguished physicians ; and only to cite one fact we will call to mind that in a modern work derivation is defined : “ the evacuation of a humor by an organ near the one in which it has its seat.” (*Dict. des sciences Medic.*)

Metastases have not been considered in a more exact manner ; it is in vain that Hippocrates, in that aphorism so remarkable and so well known, has laid down the whole theory of metastases and the other revulsive phenomena : humorism which since Galen has infected the schools, only saw in this, the transport of a supposed humor by vessels also supposed from one organ to another. This was victoriously refuted as soon as they commenced to study the sympathies and as soon as they strove to substitute facts for suppositions or at least to unveil suppositions, when they were not able to replace them by facts. But ontology succeeded to humorism ; those who rejected the transport of humors, admitted that of the disease from one point to another ; they thought that in metastases, the affection passed in *propria persona*, from one organ to another ; thus they said, and still say, *a visceral inflammation may be produced by the retrocession of gout, herpes, &c.* ; they really thought that the gout and herpes, of which they seemed to make *entities*, abandoned an articulation, or a point of the skin, to transport itself to an internal organ ; and they added it is necessary to *recall the gout, the herpes, &c.* and no one said that the irritation of an organ could overcome or replace that of another. The gout is not transferred to the stomach ; the gout is only an articular irritation which can be prevented or replaced by a gastritis. We do not recall the gout to an articulation but we reproduce there, the irritation which existed in it before. A few words from M. Broussais will suffice to refute this opinion of the ontologists : “ To say that gout is transferred to the brain, when mania



saying that mania is transferred to the great toe, when gout replaces a paroxysm of delirium."

We will relate rapidly, what clinical observation teaches with regard to the principal phenomena of metastases : 1st, most frequently, an organ affected with chronic phlegmasiâ receives with more facility than the others, and concentrates on itself, the influence exercised by a distant organ which becomes accidentally the seat of an irritation ; and this irritation is hardly established in the organ affected with chronic phlegmasia before it disappears in the other ; a revulsion having taken place. A knowledge of this fact is very important in therapeutics, for it changes entirely the choice of means proper to re-establish the irritation in the second organ, if this procedure is necessary. Thus when we see a woman with suppressed menses present the symptoms of chronic gastro-enteritis, we say that this disease depends on amenorrhœa, and apply leeches to the vulva, administer emenagogues, &c. with the intention of recalling the menses. This opinion and consequently this treatment are in certain cases well founded ; but it also frequently happens, and this is not sufficiently remarked, that the chronic gastro-enteritis pre-existed and produced the amenorrhœa, by hindering the action which should exist in the vessels of the uterus, in order for the menstrual evacuation to take place. Leeches to the vulva and emenagogues are then useless ; we must combat the inflammation of the digestive passages and we will then see the catamenial flow reappear spontaneously. It is because these distinctions of metastases are not established, we see so many amenorrhœas and many other chronic maladies obstinately resist all the means employed. 2d, In other cases the metastasis falls on a healthy organ which becomes diseased, because the one which was inflamed, made the other participate sympathetically in its irritation, and because this sympathetic affection has become stronger than the one which gave it birth, and has put a stop to it : thus, a gastro-enteritis gives rise to a sympathetic cerebral irritation ; this becomes very intense and the inflammation of the digestive mucous membrane disappears ; this is often seen in the morbid condition, called *ataxic fever*. This example will not be a proof for persons who have not the same opinions that we have on *essential fevers* ; we will give another : all the authors who have written on pneumonia have said, that delirium or a comatose state may be its crisis. This is the



history of facts. What signifies their expression translated into physiological language? that the cerebral irritation which causes the delirium and comatose state, may become stronger than that which gave it birth, and put an end to the latter. 3d, This transmission may be gradual, as in the preceding cases, or on the contrary, very rapid; this is what is called metastasis by repercussion. This does not ordinarily take place except when a powerful sedation is exercised on the organ primitively affected; the irritation in this case is said to be transported to the most feeble organ; as if the weakness of a part, that is to say the low degree of energy of its organic properties, was not on the contrary, a circumstance unfavorable to the establishment of irritation, which is only an exaggeration of the action of these properties. By a comparison destitute of all foundation, they have formed the same idea of the particular force of each organ, as of the general force: thus they say that metastases take place in the most debilitated organs, because they have before said that a weak individual was more subject to disease than a strong one. Doubtless this is true, because in a person of this kind whose health is wavering, there is already some organ diseased, or much disposed to be so. But let them cease to appreciate the forces of the muscular system only, and to judge of the condition of other organs, by that of this system, and they will no longer say that it is because an organ is weak it more easily becomes diseased. The vulgar make use of the same expression: they say of an individual who is subject to colds, or whose eyes are sensible and irritable, that he has a *weak breast* or *weak eyes*. This confusion is very prejudicial to the understanding of the true nature of diseases.—Why is a weak individual more frequently sick than a strong one? They answer, that it is because he is less able to resist morbid influences. But what is this resistance? who has ever been able to appreciate it, to know it? Who can contend that this is not ontology? Physiology on the contrary, resolves the difficulty for us. What do they mean by a weak individual? one whose muscular system is little developed, according to their faulty habit of estimating the force of this system only. But then, other systems, other organs have a greater preponderance of action even on account of this weakness, and consequently a greater disposition to diseases; for the more energetic the action of an organ is, the more easily it is raised to the point of disease.

Heretofore we have only spoken of those cases in which an irritation produced sympathetically, or under the influence of other causes, becomes revulsive of an irritation, existing in another part of the economy; we should now mention one of the most remarkable points, and the most important in the history of revulsions. The irritation which comes on secondarily, is not always critical, though it be stronger than the first. Often we see the original one disappear, or diminish considerably for a time; but it soon reappears with all its intensity, and the other ceases in its turn: they say then that *the crisis has aborted*, that *the critical effort is not sustained*. In submitting these facts to a physiological analysis, we see that the inflammation of one organ has determined sympathetically an inflammation in another point, or that the latter has come on sympathetically; that this secondary irritation has become revulsive of the first, since existing in a high degree, it has produced in its turn sympathetic repetitions; that these have operated through preference in the organs primarily affected, which are still pre-disposed to irritation, or still irritated. "The organ which has become the seat of a metastasis," says M. Broussais, "excites sympathies then peculiar to itself; and these may in their turn become predominant."

Thus in a gastro-enteritis, called *essential fever*, there supervenes an inflammation of the parotid gland; the assemblage of symptoms caused by gastro-enteritis becomes calmed or disappear. But this inflammation of the parotid gland brings on an inflammation of the submastoid region, the corresponding side of the face is seized with erysipelas and the brain with irritation; but alas! it is impossible for the disease to stop here. This inflammation is reflected on the digestive mucous membrane and all the first symptoms reappear. Another example: in the course of a gastro-enteritis, an erysipelas supervenes and the former is no longer appreciable; the erysipelas marches towards resolution, then the disease is, as we say, decided: but the cutaneous inflammation in place of following this favorable course, augments in intensity, and becomes gangrenous; the inflammation, as in the preceding case, is repeated in the digestive passages and the gastro-enteritis reappears with all its force: the acute exanthemata often present this chain of phenomena; the gastro-enteritis preceding them is calmed by the appearance of the cutaneous eruption; if the latter is accom-

panied with a great deal of inflammation, we see the inflammation of the digestive passages reappear with great intensity. This then is what constitutes true and false crises. A true crisis is a secondary irritation which becomes revulsive, and which soon terminates of itself: a false crisis is this irritation at first revulsive, but producing after some time sympathies, and bringing back the former symptoms. We will make applications of these principles to the employment of cutaneous revulsives.

After having spoken of revulsions which act from one organ to another, in a rapid manner, under the influence of powerful stimulations, we must treat of those which are the result of a slow, long continued action, by which the system or apparatus in which it is seated, takes on a greater degree of energy, becomes predominant in the economy, and diminishes proportionably the activity of another system.

All physiologists have observed, that a preponderance of such or such a system in the economy, produced very great differences in the physical and moral natures of the different individuals, who were endowed with them. The division of the temperaments has been founded on this observation, and we have seen that most of the diseases presented by a subject of a particular temperament, belonged to a disturbance of the functions of the system whose predominance constituted this temperament, and that by giving more strength to another, the equilibrium was re-established, and the morbid susceptibility of the first diminished. These remarks are perfectly correct; and they may be the source of a great number of considerations of pathological physiology which have not yet been deduced from them. This diminution of the action of one entire system on account of the greater development of another is a true phenomenon of revulsion: these facts enter entirely into the definition which we have given of the latter; they appertain then essentially to our subject. We do not pretend to trace a complete picture of the effects of the relative predominance of one of the principal organic systems, we wish only to point out in a cursory manner, the influence which it exercises in the various phenomena of diseases. We will extend these observations to the sanguine, muscular, lymphatic, and nervous systems.

We have already said that the very marked development of an apparatus or system, existed always at the expense of

others, which have less energy in proportion as the first has more. Many facts present themselves to establish this assertion. We know that the more energetic the organic action of a part is, the more susceptible it is of increase ; also we see that the sympathetic phenomena of an inflammation are reflected specially on the organs whose development is most marked ; from this source arises the difference of the general symptoms of inflammation of the same viscus in different individuals. Let a gastro-enteritis arise in a subject whose sanguine system is highly developed, we will see as symptoms the exaltation of the action of this system : let this subject be nervous, the disease will be characterized by delirium, spasms, convulsions, and a crowd of other phenomena belonging to sympathetic irritation of the nervous system. Let in another individual the white vessels have the predominance, and we will observe mucous secretions, &c. These examples which it would be easy to multiply, prove that the system or apparatus predominating in the economy, are those which are most often diseased. Almost all the other parts then have less force ; it is easy to prove this. Subjects whose sanguine system is well developed, whose muscles are prominent, are strangers to convulsions, to hypochondria and other nervous diseases ; the viscera in them are less irritable : this is why we say that strong individuals are less often sick than weak ones. We have already said that this force is relative only to the muscular system and that the other organs being proportionally more weak, have consequently less disposition to inflammatory affections. In many circumstances we see an alternate transport of the forces of the muscular system to other parts—that by a sedentary life, a subject whose muscular system is predominant becomes weakened ; let him give himself up at the same time to the labors of the closet, &c. we will see then the nervous susceptibility develop itself and this subject may be affected with all the diseases depending on an excess of action in the sensitive system ; but in this case, as in those which are much more numerous, where the predominance of the nervous system is primitive or constitutional, we may suppress this preponderance by making the muscular apparatus and sanguine system acquire it ; the development of the latter being connected with that of the muscles. Thus if we recommend to a subject, whose nervous system is very irritable, habitual muscular exercise, the duration and efforts of



which should be gradually increased ; let him be forbid at the same time the labors of the closet, the pleasures of love, and the influence of all other modifying excitants of the nervous system ; let him make use of simple and nutritious aliments ; let him augment their quantity in proportion as his muscular forces are developed ; and at the end of a longer or shorter period the exaltation of the action of the nervous system will be seen to cease ; at the same time the individual will become more easy in his movements, his external form will have acquired a greater development, and he will be able to engage in energetic and long continued muscular efforts. It is useless to notice the vulgar opinion, that the means which we have just pointed out, strengthen the nervous system ; the abuse of analogy, the idea that an organ is the more frequently diseased in proportion as it has less force, has given rise to this error. Moreover, though badly interpreted, these facts were not the less known and the most superficial examination of the phenomena of diseases, was sufficient to unveil them. For a long time also, we have made good use of a knowledge of them in the treatment of the latter ; and we know what success many physicians have had in the cure of nervous diseases, by recommending the employment of means which would give more energy to the muscular system, to ladies of fashion exhausted by luxury, and men of letters laboring under a crowd of evils which poison the pleasures of study. We know that Tronchin only gave to hysterical gallant ladies, pills of bread gilded ; but to make amends he forbid them their coaches, commanded them to take long walks, and made them scrub their own apartments. It is rarely that nervous irritations resist such a revulsion operated on the muscular system. We will further remark that many antispasmodic substances, as aromatic waters, alcoholic tinctures, stimulate the circulatory apparatus, and calm rapidly the nervous irritations.

In acute diseases, in visceral inflammations, this inverse energy of the forces of the muscular system and other organs, is still more strongly marked, and the transport of forces from one apparatus to another much more rapid. In almost all the inflammations of the viscera, particularly in those of the digestive mucous membrane, there is diminution of muscular force, and the latter is in direct ratio to the intensity of the former. These different degrees have been



designated under different names, as *fractura*, *prostratio*, *sideratio virium*. This alteration of the muscular forces was the phenomenon which struck physiologists most. By a singular abuse of analogy, they judged according to these, of the condition of the internal organs; and in contempt of other symptoms, and of the results of *post mortem* examinations, they were, if we may be allowed the expression, the only point which fixed the attention of physicians. It is because Brown only estimated the strength on the exterior, that he attributed almost all diseases to debility, and that he opposed them by tonics. But we repeat it, the diminution of the muscular forces is only the result of this law, which we have before inculcated; when the forces are predominant in one system, they are less in one or several others. Thus when the inflammation of the digestive passages is carried to the highest degree, the prostration of muscular power is extreme, and this phenomenon is so remarkable that fixing the attention on this alone, and turning from the examination of other organs, it has appeared to constitute the true nature of the disease, and a celebrated nosographer has endeavored to establish on this symptomatic effect, the character and curative indications of the morbid condition which produced it.

Let us examine now the mutual relations of the forces of the lymphatic and red vascular system; they present in many cases the same antagonism: often the equilibrium cannot be broken to the advantage of one, unless the other be weakened. Thus in subjects of very energetic sanguine systems, we do not remark diseases of the lymphatic system; and reciprocally in individuals affected with scrofula, we do not see ordinarily a great development of the red circulatory system, nor consequently of diseases belonging to an exaltation of its action;\* but we set forth an opinion here which may be the subject of the warmest disputations: we signalize the antagonism of the forces of the sanguine and lymphatic systems in scrofula; this is consequently attributing the latter to an exaltation of the organic action of

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\* Notwithstanding the restrictions we lay down in the *exposè* of this proposition, some may think that we admit this antagonism to be constant. We declare then that we do not pretend that in scrofula, there never exists a marked development of the sanguine system; we have seen it accompany the scrofulous affection carried to the highest degree; the first case much the most frequent, appertains to our subject; the second is foreign to it; we will not speak of it.

the white vessels. Before passing on we should relate in a few words the facts on which this opinion is based.

All physicians have said that the great development of the lymphatic system was a formal predisposition to scrofula; that this preponderance was even a step in advance towards disease: all agree also, that the more an organ or organic system is developed, the more energetic is its action; and no one can deny that all the diseases arising from this energy of action, are irritations, or in other terms, a morbid exaltation of that vitality, already existing in an elevated degree. This granted, how can we conceive that if the great development of the lymphatic system predisposes to scrofulas, nay, even renders them almost inevitable, how can we conceive this affection to result from debility of the white vessels? The principal source of error then on the nature of scrofulas, is in the influence observed of debilitating causes on their production, and of exciting causes on their cure; but we will explain presently the apparent contradiction of these facts, when we speak of the inverse preponderance of the lymphatic and sanguine systems, in the cases where they have been observed. Pathologists acknowledge as identical the engorgement of the subcutaneous lymphatic ganglions, and those of the organs of the same nature enveloped in the duplicature of the peritoneum forming the mesentery; which affection is called *marasmus*. But we know, and this fact is indisputable, it rests on pathological anatomy; we know that the swelling of the mesenteric ganglions results from inflammation of the intestinal mucous membrane. Indeed, when we examine the body of an individual affected for some time with gastro-enteritis, in whom the mesenteric ganglions are engorged, we see a strict dependence of affection between the different points of the diseased mucous membrane and the corresponding ganglions. Those receiving lymphatic vessels which open on a part of the mucous membrane, whose red color announces the existence of inflammation for some time, alone are tumefied: if we cut into them, red capillaries are seen, but we do not meet with disorganization; in short they appear to be recently affected. The ganglions on the contrary, corresponding to the parts of the mucous membrane, whose color is black, (a well known trace of inflammation of long standing,) are no longer red in their interior; they are harder and their centre presents the product of inflammation, known under the name

of *tuberculous matter*. Finally, those which receive their vessels from parts of the mucous membrane, exhibiting traces of an alteration still more ancient, which are ulcerated and disorganized, are themselves softened and suppurated. We may follow in these cases the progress of irritation and appreciate the nature of lymphatic engorgements. If the affection of those of the mesentery is the result of an irritation, how can we conceive that an affection perfectly similar of the other parts of the lymphatic system, can be entirely opposite in its nature? If it was not possible to call in question the proofs drawn from the effects of the treatment of a disease in order to establish its nature, we might still cite numerous cures of scrofulous engorgements, obtained by the application of leeches on the skin covering them, and we might from hence deduce an argument more in favor of the opinion we sustain. We will not stop to examine the theory for a long time admitted, which attributed scrofula to a thickening of the lymph; the blindest humourism alone could give birth to so strange an opinion, now however, abandoned by most physicians, and no longer appertaining to the language of any except the vulgar.

These considerations, to which it would be very easy to add many others, suffice to establish that scrofula is only the result of excess of action in the white vessels. Let us see now the relation existing between the forces of this system, and those of the red blood; we will still find here proofs in favor of the opinion advanced on the nature of white engorgements. Most of the causes producing scrofula (irritations of the lymphatic system) are debilitating of the sanguine and muscular systems: thus a residence in low, humid, badly lighted places, repose of the body, depressing moral affections, unwholesome, scanty food, composed of substances poor in nutritious principles, very evidently debilitate the sanguine system; and as, in all cases where one organic system is debilitated, the energy of another augments, the lymphatic system, if it be already sensibly predominant, as in the organic constitution, called *lymphatic temperament*, will become more predominant still; in short, the exaltation of its action may arrive at the point of irritation. It is thus that debilitating causes produce scrofula; they debilitate the sanguine system, they destroy the equilibrium and permit the lymphatic system to acquire a greater development of action. The causes which cure scrofula, in the cases

pointed out by us, are on the contrary, those that augment the action of the sanguine system. Thus when we prescribe to a scrofulous patient, a residence in a dry, elevated, well lighted place; active exercise in the open air, under the stimulating influence of the solar rays; a succulent nourishment; the use of generous wines and condiments; gay affections; abstinence from the pleasures of love, from solitary enjoyments, we only submit him to the influence of causes which excite his sanguine system, which render him more energetic and which consequently diminish the exaltation of action in the lymphatic system? It is very incorrect then to say, that debilitants produce scrofula and that tonics cure it; for they give us to understand by this, that the modifiers producing these effects, act directly on the white vessels, or that they produce a general weakness or excitement; these expressions should be banished from the language of physiological medicine: the weakening of the sanguine system gives rise often to scrofula and in this case its excitement cures the disease. We will further add to the preceding, two remarks worthy of attention. All practitioners have observed, that a great number of scrofulous affections are spontaneously cured at the period of puberty: now every one knows that, at this period of life, the sanguine system almost always takes on more energy, and that it becomes predominant: this preponderance then is revulsive of the irritation of the white vessels. They have remarked also, that a *fever* has cured scrofulas. What are the phenomena which constitute *fever*? a visceral inflammation giving rise to a great exaltation of the action of the circulatory organs.

After this *exposé* of the principal phenomena of revulsions, I consecrated the second part of my thesis to the investigation of the application which may be made of a knowledge of them, to the treatment of these diseases; I refer these considerations to the general treatment of irritations, to which they belong.



## CHAPTER IV.

## INTERMITTENT IRRITATIONS.

Down to the time of Broussais, physicians have considered the continued type as the only one that irritation could assume, notwithstanding the great number of intermittent irritations which have been every day collected; having already shown that essential fevers were symptoms of a local inflammation, the author of the *Examen* proclaimed that irritation might be intermittent in all the apparatuses and all the tissues.

M. Mongellaz has fully developed this proposition; he has traced out a general history of the different forms of intermittent irritation, and has collected from authors a considerable number of cases, which prove the existence of each one of them. He deposited the results of his first labor in his inaugural dissertation, of which we are about to present an analysis, and to which we will add some developments drawn mostly from his second work.

The irritations experienced by the vascular and nervous systems, under the continued type, in the different organs of which these generating systems form a part, may be presented under the intermittent type; that is to say, that inflammation, hemorrhages, sub-inflammations, and nervous irritations, may manifest themselves at certain regular periods of greater or less intervals during a time ordinarily very limited. We may justly be astonished that the principal objection alleged by the adversaries of the physiological doctrines, has consisted in repeating, even to satiety, that they could not conceive of the intermittence of an inflammation! Can they form any better conception of the great number of phenomena of health and disease? and since when does the impossibility of explaining a phenomenon give the right to argue against its existence? Besides, according to the observation of M. Mongellaz, intermittence is not something extraordinary, which is only met in disease, for we see it generally in the action of organs during health, as is proved by that of the brain and the organs of sense; that of the heart and other muscles, &c. We will remark also that nothing is more rare than an irritation perfectly continued; do we not know that all the febrile irritations present an exacerbation which returns every day, very nearly at the same time? Do we not know also, that there



does not exist, according to authors, a *continent fever*, that is to say, one of an intensity perfectly equal at all its periods; that those which are most continued, have always evening exacerbations; and if all *fevers* only depend on local irritation, as we shall see further on, is it not acknowledging exacerbations and remissions of irritation? If both of these are more marked, and a shivering points out the return of the former, we say that there is *remission*; now what other difference is there between the latter and intermission, than that of more or less? But it is useless to take up more time in establishing the existence of intermittent irritations; this is abundantly demonstrated, and one has only to read the great number of cases which M. Mongellaz has accumulated in his work, to be convinced of it. We find there, 1st, amongst the external and internal periodical inflammations, are coryza, otitis, phlegmon, erysipelas, eruptive inflammations, rheumatism, arthritis, encephalitis, apoplexy, pneumonia, catarrh, croup, gastro-enteritis, hepatitis, nephritis, cholera morbus, peritonitis, dysentery, metritis, &c. 2d, amongst the hemorrhagic intermittent irritations, are epistaxis, hæmoptysis, menorrhagia, hæmatemesis, &c. 3d, amongst the nervous irritations, are odontalgia, otalgia, suborbital, and femero-popliteal neuralgias, &c. epilepsy, catalepsy, dance of St. Guy, (choria,) idiopathic asthma, certain colics, &c. 4th, finally, amongst the irritations of the white vessels, which have put on the intermitting type, we see swelling of the lymphatic ganglions of the neck and groin, sweats, anasarca, salivation, diabetes, &c.

Of all irritations, the inflammatory form is that which presents oftenest the intermittent type, and to prove this it will only be necessary to recollect that, amongst periodical affections, *fevers*, that is to say the symptoms of some inflammation or other, are the most frequent.

Intermittent irritations may be accompanied or not with sympathetic phenomena, or in other words be febrile or apyretic. In the first case, authors have given the disease the name of *intermittent fever*. If the symptoms depended on the lesion of an internal organ, in which they did not recognize inflammations, it was a *simple intermittent fever*; if they were produced by the inflammation of an organ, the diseases of which were known to them, it was a *pernicious* (malignant) *intermittent fever*, which received the names of *apoplectic*, *pleuritic*, *hepatic*, *dysenteric*, &c. according to the parts affected.

If the intermittent febrile irritation was situated internally, it was a *local intermittent fever*. Finally, in all cases where the periodic irritation was apyretic, the disease received the name of *masked fever*, which signifies, according to authors, an intermittent fever without fever, a fever concealed under the form of a hemorrhage, nervous affection or intermittent inflammation.

How can they see a fever where there does not exist any of the phenomena which constitute this condition ? It would be difficult to conceive how blindness could be carried so far, if we did not know the religious devotion which they had vowed to antiquity and the facility with which an opinion true or false was admitted, for the reason alone, that it had been advanced by some celebrated name, and because it had received the sanction of time. Thus they admitted at first the intermittence of *fevers*, and did not say that phlegmasiæ and neuroses could also be periodical; so that whenever they met the symptoms of an intermittent irritation which they could not mistake, persuaded that irritation could not put on this type, they pretended, in order to reconcile facts with theory, that it was a fever which took the form or mask of a hemorrhage, of an inflammation or of a nervous affection, because fever alone could be intermittent; as if they knew what a fever was, and it was more easy to conceive of the intermittence of the latter, than of an inflammation.

At the present day it is no longer permitted to put one's self in opposition to evident facts, whatever be the conclusions drawn from them, and however marked be the difference existing between them and the opinions announced above. When we see then, the symptoms which characterize an inflammatory, a nervous affection, &c. we are forced to acknowledge its existence, without seeking to recognize any thing else beyond what we see. We will not speak of external periodic irritations; they may be established *devisu*, and no one can afterwards mistake them, for doubtless it will only be necessary to unveil their error to those who admit *masked fevers*, (*fievres larvés*,) in order to make them deny their existence. We can show as rigorously the existence of internal intermittent irritations, and for this purpose it will be sufficient to give a glance at *malignant fevers*. Let us take for example the *pleuro-pneumonic fever*; it is incontestible that its symptoms, such as dyspnœa,

cough with sanguineous expectoration, pain in the side, heat of skin, frequency of pulse, are those of a pleuro-pneumonia. Now if these symptoms after being present several hours, disappear completely, to return after a certain time and disappear again, we have an intermittent pleuro-pneumonia, and we cannot deny this without renouncing all that induction can teach us. Let us add to what precedes, that in unfortunate terminations, this diagnostic will be still more confirmed by the traces of inflammation in the lungs and pleura, met in the dead body. But the ontologists will say this was not an inflammation, it was only a *congestion* : very well ! we will grant it to them, but let them support in turn the consequences of their hypothesis. A *congestion* is always a modification of the organic action of the part which experiences it. Now this modification is intermittent ; why may not inflammation which is another modification of organic action, also be intermittent ?

Intermittent febrile phenomena as well as the continued, produced by an inflammation whose local phenomena are little apparent, have been regarded as idiopathic, because they did not know the local lesion to which they should be attached. But analogy, the examination of causes, the analysis of symptoms, certain terminations of these diseases, the opinion of most authors on their seat, do not permit a doubt of their non essentiality. Let us examine with M. Mongelaz the conclusions which may be drawn from these different circumstances.

1st. Analogy : if continued fevers are as we shall show by and by, the symptoms of an inflammation ; if the phenomena of simple intermittent fevers are precisely the same, except the periodicity, as those of the preceding, and if they are the same as those of all inflammations generally known, we shall be forced to conclude that *intermittent fevers* are also symptoms of intermittent irritations which are misconstrued because we cannot establish redness, heat and the other local phenomena : and moreover the existence of external intermittent irritations well established, permit us to conceive of the periodicity of the irritation which gives rise to ordinary intermittent fever.

2d. Examination of causes : we see in most authors, that continued fevers have degenerated into intermittents, and we know that all the causes which have been assigned to the first are stimulating influences ; and in the cases where the

fever is presented primitively under the intermittent type, we see that they have been produced by the same causes or by special influences acting in the same manner, that is to say, by irritating.

3d. Analysis of symptoms : it is evident, as we have just said, that the intermittent or continued febrile symptoms, are identical with the sympathetic phenomena of all the phlegmasiæ ; and in the history of gastro-enteritis, we will see that the symptoms of ordinary intermittent fevers are always those of this affection, whether it be primitive or sympathetic.

4th. *Displacement* or transmutation of the fever into external inflammations : this signifies that they have seen the development of the latter arrest intermitting phlegmasiæ. Now of what other affection than an irritation, can another irritation be revulsive ?

5th. The agreement of most authors in seating this fever precisely in those organs where we find the lesions after death.

6th. The traces of inflammation found in the digestive viscera and their appendages, in individuals who have died from ordinary intermittent fevers ; M. Mongellaz observes with reason that if we cannot say *post mortem* examinations have always revealed sensible organic lesions, it is certain at least that after these diseases, as after continued fevers, we see them in an immense majority of cases : now we know that sometimes inflammations the best established during life, have left no traces after death. Moreover, pathological anatomy is not rich in a great number of facts on this subject, and M. Alibert has judiciously pointed out the reasons for it. "Physicians heretofore have been able to make but a very small number of *post mortem* examinations in individuals dead, of the symptoms peculiar to malignant intermittents, for two principal reasons ; the first we allege is that these affections, however formidable they may be, terminate notwithstanding favourably, when they are regularly treated by an instructed practitioner ; the second, is that when the patient succumbs by the inexperience of the physician, the latter is not often induced to apply himself to this kind of research." What M. Alibert here says, of malignant intermittents, is still more applicable to ordinary intermittents. However this may be, the non-essentiality of these will be shewn with much more detail, when we treat

of the intermittent gastro-enteritis constituting them. We will then occupy ourselves with the phenomena which they present and the treatment they exact; we merely undertake here, to put beyond doubt, the intermittence of irritations.

The effects of bark against intermittent affections has furnished an objection to those who deny them to be irritations: they cannot conceive say they, that if their nature is such they can be cured by tonics; but when two facts are equally well demonstrated, they are both admissible, although they should even seem to imply contradiction; and besides this may very well be only apparent; there may exist between these two series of facts an intermediate variety which escapes us; we do not indeed know how bark cures intermittents. Let us farther observe that this substance administered during the access of an irritation, always adds to its intensity, that it is only during the apyrexia it is given with success; from whence it results that it does not, properly speaking, cure the irritation, but only prevents the return of its paroxysms.

We have said farther back, that intermittence did not seem to us to be more extraordinary than continuity, and that it was even more general than the latter in the phenomena of life; nevertheless they have attached great importance to the necessity of giving a reason for it, and every one has attempted to explain its cause. The most remarkable opinion expressed on this subject, is that of M. Roche, developed in the analysis he has made of the work of M. Mongellaz. This physician undertakes to show, 1st, That they are almost always causes intermittent in their action which prepare irritations assuming this type: 2d, that they are almost always intermittent causes which give birth to them: 3d, that sometimes the influence of habit, sometimes the continuity of the action of causes, and often these two actions united keep them up. We will permit him to develop these three propositions himself.

"Intermittent irritations, we say, have always, for predisposing causes, causes themselves intermittent. Indeed, spring and autumn are the periods of the year, during which are developed most commonly these affections; those even which are produced by marshy miasms, arise almost always in the latter season. Now the common character of these seasons, is to present a considerable difference between the temperature of the day and that of the night, and often in



the space of a few hours, three or four sensible variations in the temperature and hygrometric state of the atmosphere. What then must be the effects on the human body of these frequent atmospheric vicissitudes, of these rapid and repeated alternations of cold and heat, of dryness and humidity? It will evidently be to keep up an alternation of action and re-action, which will soon be contracted as a habit. Thus an impression of cold is made upon the skin, it contracts and becomes pale; an instant after heat follows, and this membrane expands and becomes colored. Are not these the rudiments, if I may express myself thus, the first phenomena of a paroxysm of intermittent fever? Night puts an end to these impressions, but the next and the succeeding days they are renewed and are necessarily followed by the same effects: and it is thus that intermittence is naturally established. Now, let a stimulant act on any organ in an individual thus modified several successive days, thus predisposed to contract an irritation under the intermittent form, we can conceive at once that the disorder of this organ may take on the character of intermittence, especially if the function of this organ in a state of health is submitted to the law of periodicity. It is thus we ought to understand, it seems to me, production of the sporadic intermittent fevers.

“But the evidence of this theory will become more striking, if we pass to the study of the etiology of marsh intermittents. We have just seen the intermittence of the predisposing causes introduce into the economy a true habit of alternate irritation and calm, which are preserved in the manifestation of morbid phenomena. We are about to see now the stimulus which produces the disease, act itself in a periodical manner; it will seem to us very natural after this, that to an irritating agent, whose action is intermittent, an irritation should succeed which is so likewise.

“All physicians know that it is much more dangerous to walk near a marsh, whilst the dew is falling than at any other hour of the day. Every one knows that persons may traverse with impunity the Pontine marshes, for example, during the day, whilst they never stop in the neighborhood after six o'clock in the evening. These facts are sufficient to establish, that the action of miasms is quiescent or almost so during one part of the day, and is exercised with all its force at very near the same hour, or in other words, that this

action is periodical. But as we cannot be surrounded with too many proofs, when we advance new opinions, we will engage in an attentive analysis of these facts.

“Miasmata, products of the dead animal and vegetable remains of marshes, are disengaged principally and in greatest quantity, during the hours of the day in which the heat is most intense. On the one hand, the caloric hastens their development; on the other, it increases the evaporation of the water which is their vehicle, as is proved by the conclusive experiments of M. Rigaud de Lisle. Nothing of all this can be a subject of dispute. These deleterious agents are then taken up by the water, reduced to vapor, and are together disseminated through the nearest stratum of air. But this stratum of air soon becomes heated and lighter than those above, consequently it rises and makes room for a second, which likewise becomes saturated with the infected vapor. The latter becomes rarified and rises in turn, is replaced by a third, and so on, as long as the sun communicates to the earth more heat than it loses by radiation. But as soon as this luminary has sunk below the horizon, the earth radiates towards space, which sends back nothing, if the heavens are without clouds; it becomes cold by degrees, and consequently lowers the temperature of strata of air which are nearest to it. The result is, that these strata of air become condensed; and as they are saturated with the vapor holding in solution the miasmata, since they are or have just been in contact with the humid surface of the marsh, the strata deposit in proportion to their condensation, the vapor and miasm together. The more the coldness of the earth increases, the more the air also becomes cold and diminishes in volume, the more vapor there is at the same time condensed and set at liberty, and the greater is the quantity of miasmata deposited in a given time and on a given surface. It is very easy for us to conceive after this, why the influence of marsh miasmata is quiescent, or nearly so, at the moment of their most rapid disengagement, and so energetic at the fall of evening? In the first case, they are rarified; the air is too much heated for the vapor in which they are dissolved to become condensed and deposit them on any body; and, besides they are rapidly carried to a certain height in the atmosphere. In the second case, on contrary, they are collected, in great quantity, into the the smallest *volume* possible, and continually deposited on all

our surfaces of relation : the skin, the pulmonary and digestive passages ; so that, in one case every thing opposes their action ; and in the other every thing favors their deleterious influence. Thus is explained the intermittence of the action of these agents ; and we beg leave to remark that the explanation becomes itself a proof of it.

“If I do not deceive myself, our two first propositions are demonstrated : they are almost always intermittent causes which predispose to periodical irritations, and almost always intermittent causes which give birth to them. It only remains for us to prove the third, and to answer some objections to complete the solution of the problem of the intermittence of irritation.

“The paroxysm is repeated, we have said, sometimes by the influence of habit, sometimes because the causes are renewed, and often by these two actions united. A few words I hope will suffice to prove this.

“No physician denies the power of habit in the reproduction of the paroxysms of intermittent fever ; but all restrain it to cases in which the disease is of long standing. It is, however, evident, after all that has been said, that the habit already exists when the first paroxysm appears ; it is only by this that we can account reasonably for the appearance of a second and a third paroxysm, when the patient has been removed from the causes immediately after the first. Thus, for example, a regiment is camped on the borders of a pond, or in the neighborhood of a marsh : many soldiers are soon affected with intermittent fever, and one half are cured on the march, whilst the other half preserve the fever. How can we explain the repetition of paroxysms in the last during the absence of the causes, otherwise than by the influence of habit ? Will they say that marsh miasmata possess a specific property, in virtue of which they give birth to paroxysmal diseases, as the virus of small pox, of syphilis, of hydrophobia, &c. develope these diseases ? But the effluvia of marshes are not the only causes of intermittent irritations ; we must then grant the same property to other agents producing them : the pretended specific action therefore disappears. Besides this specific action does not exist in fact, because the marsh emanations produce often continued diseases. It is then evidently in virtue of this tendency in all our tissues to repeat certain acts, for the reason only that they have already executed them many times ; a ten-

dency recognized by all physiologists, and which even becomes the source of the precision which all the acts of our economy acquire : it is we say, by the effect of this tendency which, put in action, takes the name of *habit*, that the paroxysms of fever are renewed though the cause which gave rise to the first has ceased to act. This habit is often already established when the first paroxysm declares itself, because the action of its causes has been several times exercised before producing a morbid effect, and each time it has been followed by reaction.

“But the paroxysms are sometimes independent of one another, and are only repeated because the causes are renewed. In the example which we have chosen, it is evident that it is thus with the men who were cured merely by their removal from the marsh. Each paroxysm then is the result of a new impression of miasmata, since it ceases to manifest itself when this impression ceases to be repeated ; the habit is not yet established. It is the same when the paroxysms have between them an interval of ten, fifteen, twenty, thirty, or more days : these are so many separate affections, each one of which carries with it all its conditions of existence.

“Finally, the paroxysms are often kept up at the same time, by the influence of habit and the continuity of the action of the miasmata : this happens in patients who continue to inhabit the place of infection.”

However satisfactory these ingenious explications of M. Roche may be, we must declare, that amongst the causes producing periodic diseases, there are still some which his theory does not embrace. But perhaps the exceptions are merely apparent ; for it may be that they are accompanied by other influences, which have escaped the observation of physicians. However this may be, we hope that the talent of M. Roche will do for these, what he has already done for the others.



## CHAPTER V.

## TREATMENT OF IRRITATIONS.

It is easy to foresee that the reform introduced by M. Broussais in the theory of diseases, must of course produce great changes in their treatment. The new notions he has given on their nature, have led to other curative indications, and have indeed often modified the means by the aid of which they are fulfilled. It is only in the history of the treatment of inflammations in the principal organs, that the truth of this proposition can be put in its strongest light ; here we can only present the principles he has established on the general treatment of irritations.

By raising up the independent power of nature in respect to physicians, and opposing justly the perturbing activity which Brownism had sanctioned, the *Nosographie philosophique*, threw practitioners into an opposite excess, by making them thus to speak, a law by which they were limited, in the treatment of acute diseases, to the prescription of hygienic means and to the removal of all the influences which can oppose the intervention of a *salutary crisis* ; they were also seen to employ the most feeble means, and still with the greatest reserve, against the most intense inflammations. If revulsive irritations supervening spontaneously did not arrest their march, they often become fatal ; or if the treatment diminished their intensity, they passed frequently into the chronic state. The true character of the disease then ceased to be known, and it received another name. They no longer saw any thing but an *organic lesion* the incurability of which was admitted before hand, and they thought they had done every thing for the patient, after having administered stimulants to sustain his forces and delay the progress of consumption.

In his writings and lectures the professor of the Val-de-Grace, often combats this method, the dangers of which he cannot point out with too much care. Without doubt, at the time when the nature and seat of the greater number of diseases were not understood, and when the mode of action of therapeutic agents had yet been little studied, the expectant plan was preferable to the employment of perturbing empirical means, and medicinal substances whose influence had not yet been sufficiently appreciated, in different diseases ; but in the present day too great a number of



these secrets are unveiled for us to neglect imposing on ourselves the rigorous duty of putting in force all the resources we possess for arresting the march of diseases, and shunning the fatal consequences they may lead to. It is remarkable that the *expectantists* in spite of their inviolable respect for Hippocrates, wander far from their model and are far from confining themselves to the method of the father of medicine. They indeed renounce expectation as soon as inflammations are accompanied by muscular debility and irritation of the nervous system, (adynamia and ataxia) and they recur then, with all haste, to the most energetic stimulants, and to all the most evidently perturbing means. We see them also administer an emetic at the commencement of almost all maladies, under the pretext of freeing the stomach of fluids which may exercise on it an unfavorable influence; and it is only after the employment of emetics, that they limit themselves with security to dietetic means. But we will ask of them whether the harmlessness of emetics is such that they can be ranged under the principles of expectantism. We see then that amongst the physicians of our day, this method only proscribes active antiphlogistic means; from whence we have a right to conclude that if in the infancy of the art, the ignorance in which they were plunged in regard to the nature of diseases and the action of medicines, gave rise to the expectant plan, it was only put in force at the present time, by the fear of symptoms of adynamia and ataxia whose development was attributed to the employment of antiphlogistics. And their confidence in crises made them think antiphlogistics almost unnecessary. But why await a doubtful success from the efforts of nature when the employment of means which can produce a cure is without danger? Crises do not take place in all diseases; when they do supervene, they are not always salutary, and sometimes even they are fatal as in cases where the revulsive irritation constituting them, is established in an organ more important than the one primitively affected; and then as M. Broussais remarks is it not useful to prevent them and imprudent to await them? Finally, we have seen that the phenomena called critical were more frequently the effect than the cause of the cessation of the diseases in which they appeared.

The numerous researches of M. Broussais on chronic phlegmasiæ have convinced him that the greater number of

inflammations only arrive at this state because they had been maltreated at their commencement, and that the art of preventing the disorganization of tissues is no other than that of arresting acute irritations, that we ought to combat with more activity in proportion as they may threaten greater danger. We should only abandon to themselves those which are slight and affect tissues of little importance ; but when they are seated in the viscera, however light they may be, they should be combatted from their commencement ; for too often it happens when abandoned to themselves, they take on a degree of activity against which all the resources of the art may become impotent. We may, however, rest on *expectation* at the commencement of diseases, when their symptoms are not sufficiently marked to point out their seat and nature, and the state of the patient does not inspire fear.

It was not sufficient to have imposed on physicians the law of combatting from their commencement the greater number of irritations ; M. Broussais has given to this precept an extension which still adds to its importance. He directs us not to stop until the irritation has ceased, or we are certain that it will very soon cease. If there are physicians whom the danger of visceral inflammations does not make an impression on, and who only oppose to them impotent means, there is a greater number who it is true, attack irritations with activity, at their commencement, but who think enough has been done when they have moderated their violence, and who abandon to nature the care of finishing the cure. If sometimes their confidence in the *vis medicatrix* is not deceived, in how many cases has it not become fatal to the patients ? We know with what facility irritations, at first calmed, resume after some time of remission, their former state of acuteness. Then the time of the invasion is more distant, the patient has less strength, and the fear of weakening him more, makes the tendency to expectation triumph. If in many cases, the irritation does not undergo an augmentation, (*recrudescence*,) in a great number also, it remains at the degree to which the physician has made it descend ; it becomes chronic, and then the treatment, with more difficulty, offers much less chance of success. We ought then to combat with perseverance all serious irritations, until they disappear, by proportioning to their decreasing intensity the energy of the means we oppose to them. Those

who have followed the practice of M. Broussais have been able to assure themselves of happy results by this method. We will see further on, that the convalescence of patients who have been submitted to this plan of treatment is much shorter than that of individuals, who, having been treated with less activity, have preserved their disease for a long time. We know that irritation, arrived at a certain degree of intensity, is rarely confined to its primitive seat, since the sympathies extend ordinarily to other organs. These secondary irritations cease, when they are light, with that which has excited them and keeps them up, and it is sufficient in this case, to combat the latter to make the other disappear; but we have remarked also that frequently they become independent of that which gives rise to them, that they persist after its disappearance, and that sometimes even they re-produce the original irritation by means of the sympathies they excite in their turn. They ought then to fix particularly the attention of the physician, who should combat them with as much activity and perseverance as if they were primitive. When the sympathetic irritation, become more intense than the primary affection, seems to produce a revulsion of this, it should be let alone if it has supervened in an organ where it is not more dangerous than in the first; but even under these circumstances it should be moderated by appropriate means, if it assumes an intensity such as to make us fear the return of the affection which it had become revulsive of. It is superfluous to say that every time this revulsion takes place on the viscera, it should be combatted with energy, by attempting particularly to re-produce the external irritation which had disappeared.

The means we oppose to irritations, differ very much in their nature and mode of action. We should refer them to three orders which constitute as many antiphlogistic methods: 1st, debilitants; 2d, revulsive irritants; 3d, stimulants applied on the seat of the irritation. The first act by diminishing directly the energy of the excitement in the affected part: these are true counter-stimulants; the second, by producing in another point an irritation which puts a stop to the one we combat. The mode of action of the last is little understood, and can be only appreciated with difficulty. Finally, we should join to these means those agents which possess specific properties against certain irritations, or at least whose efficacy is almost constant and

whose mode of action is inappreciable. Let us cast a glance at the means employed by each one of these methods, and let us point out the principal circumstances which determine the choice of one amongst them in the treatment of the different forms of irritation.

#### ARTICLE I.—DEBILITANTS.

Debitants are those means which despoil the economy of the principles of nutrition, or which exercise an influence on the tissues opposite to that of stimulants ; such are diet, general and local blood-letting, mucilaginous drinks, external application of fluids of the same nature, and of cold ; finally, the more or less perfect repose of the organs ; for although the suspension of the function of an organ does not hinder its organic action, no one can deny that the latter is stronger when the first is exercised. The pain produced by the exercise of an irritated part, the diminution of nutrition which organs condemned to inaction undergo, and its increase under opposite circumstances, finally, the irritation which the exaggerated exercise of an organ often produces, demonstrates it evidently to be, and should make us regard repose as a sedative means possessing great advantages.

The most powerful of the antiphlogistic means is without doubt blood-letting. M. Broussais has given some remarkable precepts on the application of this agent to the treatment of inflammations, and principally on the preference to be given, according to circumstances, to general or local bleeding. Many physicians are yet in a state of incertitude on this subject, others are ignorant of its importance ; for we see a great many employ almost exclusively general or local blood-letting. In order to decide this question, it is necessary first to study the very marked differences which the effects of each presents ; we will reproduce then here the considerations presented on this subject, in several inaugural dissertations. Amongst the great number we possess on blood-letting, the majority offer but little interest ; we have only remarked those of M M. Flahaut and Labauche, who have described with exactness the effects of general and local bleeding on the economy, leaving us still however, to desire more precise principles on the employment of each, in the treatment of phlegmasiæ. We should confine ourselves principally here to the investigation of the influence which capillary bleeding exercises on the economy ;



but we will first report what M. Flahaut has said of the effects of general blood-letting.

The sudden diminution of the whole mass of blood, operated by phlebotomy or arteriotomy, produces a greater or less depletion of the whole system, and exercises a debilitating effect more or less marked on most of the organs, by diminishing the quantity of blood carried to each one of them, and diminishes the force, with which it is projected; for there is necessarily equality between the quantity of blood which the heart receives and that which it pushes forward, and this organ contracts with the more energy in proportion as the circulatory system is more full. Thus general bleeding for the reason alone, that it diminishes the whole mass of blood, diminishes also the activity of the circulation, and the excitement of most of the organs, because they receive less blood, and this liquid penetrates them with less impulse; and so true it is, that the diminution of the whole mass of blood influences the inflamed organ, that the dyspnoea in pneumonia diminishes in a very marked manner during an abundant bleeding. These effects are more marked in proportion as the vein on which the bleeding is practised, is more voluminous and the orifice large. This is the reason why, in acute inflammations of parenchymatous organs, we direct bleeding from a large vessel and free orifice. Another effect of general bleeding is to render more active, the circulation in the vein which is opened, and in the neighboring vessels communicating with it. An open vein is then traversed in a given time by a greater quantity of blood than if it was untouched. This fact is too evident to demand any illustrations. This vein then is more accessible to the blood which the corresponding capillary system furnishes. The neighboring parts, whose blood is received by the opened vessel, ought then to become disengorged; but if the blood escapes with more facility from these parts, the fact is incontestable that it flows into them also in greater quantity, since its course is more rapid; if then, at the same time that the whole mass of blood is diminished in one part, the afflux of blood to it is favored, this will necessarily be to the detriment of the others: it is thus we understand the sudden disengorgement of the head by a bleeding from the foot. The quantity of blood which the brain receives, is sometimes so feeble, that we see syncope result from it.—The ancients have designated this effect of bleeding under



the name of *derivation*. Every one knows how many controversies it has given rise to ; some have denied it altogether, and others have exaggerated its importance. Nevertheless, we think with M. Flahaut, that it cannot be disputed ; for facts and reason agree in establishing its reality ; but we acknowledge that this derivative effect of bleeding is only instantaneous, that it only exists while the blood is running, or perhaps for a few moments after it has ceased. But the effect is already produced on the inflamed organ ; it received just now more blood than the other organs ; the part on which the bleeding is practiced, receives at present more than the inflamed one, and this interruption in the activity of the congestion which was seated in it, will often permit the equilibrium to be re-established.

Since bleeding favors the afflux of blood into the part it is practised on, what should we think of the effects of the bleeding, authors have advised in certain cases, from the neighborhood of the organ inflamed, and which they have called *revulsive* ? We wish that M. Flahaut had made use of the data he has just established himself, to resolve this question. For our part, we think the admission of a derivative bleeding and of a revulsive bleeding implies contradiction, and that if derivation can be produced by the flow of blood, revulsion also cannot be the effect. Besides, it seems to us that, since bleeding favors the afflux of this fluid into the neighboring parts, far from determining a revulsive effect, when they practise it at a short distance from the inflamed organ, the congestion is augmented ; especially if the capillary system of this part terminates in the vein opened : thus when the subcutaneous jugular vein is opened, to unload the brain by means of the communications existing between this and the deep seated jugular, it is evident that if the blood flows with more rapidity from the brain, it must also arrive there with more rapidity, since the progressive resistance the arterial blood experiences in its course, is diminished in the cerebral tissue ; in this manner we counterbalance the advantageous diminution of the impulsive force of the heart, produced by the subtraction of blood : theory indicates then that we should not open those veins which bring away the blood of the inflamed organ, since by that means we render the circulation more active in its tissue. But is experience in accordance with this ? A great number of facts would be necessary in order to answer this important question ; for,

admitting revulsive blood-letting, we would oppose a phlegmon of the hand or forearm by opening the veins of this side ; whilst, if we were to consult only reasoning, we would bleed from the other arm.

But we repeat again that, if the derivative effect of blood-letting exists, it is impossible that it be revulsive, and *vice versa*. In vain they would bring forward the authority of the authors who have recommended revulsive blood-letting. We know what influence a preconceived idea exercises on practice ; and every one knows that its bad results do not always make persons doubt its regularity. And, moreover, we may also remark that many physicians have assured us that bleeding practised in the neighborhood of inflamed parts, has often augmented their engorgement. What we here say of phlebotomy, does not seem to apply to arteriotomy ; indeed when we open, for example, the temporal artery, it is evident that the blood will be thrown in greater quantity, into the external carotid artery, than into the internal ; since the impulsive force of the column of blood meets less resistance in the first than in the second. A greater quantity of blood will traverse, it is true, the primitive carotid artery ; but this circumstance cannot destroy the effect of the opening made in one of the branches of the external carotid.

The effects then of general blood-letting are the diminution of the mass of blood and of the impulsive force of the heart, a momentary afflux of a greater quantity of blood, to the neighborhood of the part from which it flows, and consequently the weakening of the vascular system, and principally of organs abounding in sanguine vessels. These different effects are more marked in proportion as the subtraction of blood is rapid and abundant.

M. Labauche has very well described the effects of capillary blood-letting, and has explained the difference existing between this and general bleeding. He points out first the pain, more or less severe, which always accompanies the division of the skin by the leech bites, or cutting of a scarificator ; the irritation following and the fluxion determined towards the part of the membrane on which it is practised. It will only be necessary to examine what passes in every local bleeding, to be assured that it always presents these effects in a degree varying, according to the nature of the means employed ; we will see that it is to these we owe the different results of capillary and general bleeding. Another

effect produced at the same time as the first, is the issue of a greater or less quantity of blood, the flow of which acts in a manner inverse to the irritation whose influence it destroys by the congestion disappearing at the same time that it is forming. It is the coincidence of the flow of blood and the local irritation, which constitutes the character of local bleeding which distinguishes it from general bleeding and revulsive irritation, and makes it participate in the effects of both.

The results of capillary bleeding are modified by the relation existing between the two series of phenomena accompanying it. If the flow of blood is small, the irritation is more severe, and sometimes it is sufficiently so to increase that which we combat. In the contrary case, the phenomena of irritation of the skin, are not very sensible, and the effects of the local bleeding participate more of those of general bleeding. This is the reason why small applications of leeches to acute inflammations often add to their intensity. We may then, by making the depletive or irritant action of local bleeding predominate, and by directing it with sagacity, fulfil the different indications which the different degrees of irritation we combat present. If the irritation exacts a treatment more revulsive than debilitating, we bleed in the manner which produces the most irritation, and we stop the flow of blood at the end of a short time, and *vice versa*.

Thus we prefer cupping to leeching, where, being able to act on an extensive surface, it is desirable to produce a high degree of irritation on a point of the integuments, and to draw but a small quantity of blood. We would, on the contrary, have recourse to leeches when it is necessary to unite a moderate irritation with a sanguine depletion capable of balancing it or even of surpassing it; because it is necessary that a sufficiently great quantity of blood be subtracted, and because an irritation of the skin, though feeble, might increase the one we combat.

The inflammation, determined in the part of the skin which is the seat of the local bleeding is ordinarily moderate and is dissipated at the end of two or three days; but sometimes it is more intense, persists and leads to suppuration. "I have several times had occasion," says M. Labauche, "to observe this effect after the reiterated application of leeches. The suppuration which takes place from the bites, has appeared to me sometimes to aggravate the condition of the patient, at others to concur in the favora-

ble termination of different inflammations, especially of those seated in the viscera; so that it is difficult to determine before hand the cases in which they may be useful or injurious." It seems to us that by the aid of a knowledge of the laws of sympathy, M. Labauche may get over this difficulty. Indeed, in all cases where the inflammation we combat is acute, in a word, where revulsives would be dangerous, capillary bleeding, accompanied and followed by a high irritation of the skin, would also have consequences to be dreaded: that is to say that in place of being revulsive, it will exasperate by its sympathetic inflammation on the diseased organ, the inflammation to which it is opposed. On the contrary, in cases where the latter is light, or chronic, a high irritation on the skin may operate a revulsion.

If we now examine the influence which capillary blood-letting exercises on the economy, we shall see that it confines itself almost always to the parts sub-jacent to the region of the skin on which we practise it. The irritation of this membrane, the congestion which takes place there, and the flow of blood accompanying it, must modify the organic action of the neighboring parts, having with it vascular and nervous relations or sympathetic connexions; and this modification consists almost always in the diminution or cessation of the inflammation experienced by these. It is not only in the tissues continuous with the skin, and having with it extensive vascular and nervous communications, that these effects are observed; they take place in deep seated parts, in those which seem to be isolated, and have no direct connections with the skin: such are the brain, the gastro-pulmonary mucous membrane, the liver, &c. We must acknowledge then, that the sympathies play the principal part in the effects of local bleedings; it is impossible for any one to agree with the opinion of M. Labauche, who asserts that they are more marked in the inflammations of tissues having numerous vascular and nervous communications with the skin, if he does, he must be ignorant of the facility and rapidity with which an application of leeches to the epigastrium, sternum, neck, &c. remove a gastritis, pulmonary catarrh, or an arachnitis.

When the subtraction of blood caused by local bleeding is very abundant, its effects are not felt by the organs alone corresponding to the point of the skin on which it is practised, they are extended to the whole economy; in this they



resemble phlebotomy ; they are always in relation to the quantity of blood drawn, and they contribute often to render local bleeding very efficacious in the treatment of inflammations of a high degree of intensity. There are even cases where the latter is not diminished, as long as the general effects of the bleeding, (which always supposes a considerable local depletion,) are not manifested, and in which no advantageous result would have been obtained, and where the disease would even have been aggravated, if a small quantity of blood only had been evacuated. Abundant local blood-letting then, may often supersede general bleeding, which we are sometimes obliged to use before the application of leeches.

The preceding is sufficient to enable us to appreciate the great difference existing between the mode of action of general and local blood-letting. It is impossible to substitute the former for the latter, because capillary bleeding acts specially on the part where it is practised and has but a slight influence on the general circulation, whilst phlebotomy produces a precisely inverse action ; its effects are only perceived in the inflamed organ by means of the changes effected on the whole economy. The one only acts on the irritated tissues by the loss of blood produced ; the other on the contrary besides this action, evidently exercises a revulsion on the part it is practised on, by means of the irritation of the skin accompanying it. M. Labauche says with reason that it would often be necessary to repeat the general bleeding till the patient is completely exhausted, in order to arrive at the same results as by capillary bleeding ; and besides that there are many circumstances under which we could not without rashness draw a great quantity of blood, and could not produce the least change in the inflamed organ. " In many local engorgements," says M. Bichat, " do not think to diminish the quantity of blood in a part of the capillary system, by diminishing the mass of fluids in the large trunks ; there might be a fourth less blood in the economy than there is, and if a part is irritated, it will receive the same quantity."

In order to point out with exactitude the cases in which local bleeding should be preferred to phlebotomy, and the reverse, M. Labauche established as a principle, that inflammations of the membranous tissues, yielded only with great difficulty and very rarely to general bleedings, though pro-



fuse ; and that they have consequently the great inconvenience of weakening patients very much, and which, if we may use the expression, is a pure loss, whilst on the other hand, these inflammations are opposed with the greatest success by capillary bleedings. This explains the diversity of opinion admitted on the advantages of bleeding in the treatment of many inflammations, and in that of idiopathic or essential fevers. If we reflect that the latter are always produced by inflammation of the gastro-intestinal mucous membrane, we can conceive that general bleedings, which alone were used in these cases formerly, must debilitate the patient in the greater number of cases, without conquering the inflammation. M. Broussais observes, that it is for the same reason that bad effects from bleedings are remarked in diseases where the bilious secretion is exaggerated, and that they have been banished from their treatment. Physicians did not know that the irritation of the liver existing in these cases is dependant on gastro-duodinitis, which yields with difficulty to general bleedings.

Membranous inflammations, however, sometimes call for phlebotomy : it is in cases where a predominance of the sanguine system exists, and where the sympathetic phenomena are marked principally by exaltation of the action of this system. We observe then if the irritation is high, a general sanguine turgescence ; the face is injected, the skin coloured, the pulse full, hard and frequent. We should oppose to these symptoms one or two general bleedings ; but they do not dispense with the necessity of local bleeding, which under these circumstances even, is sufficient sometimes, when practised to a large extent. In acute irritations of organs very rich in sanguine capillaries, (parenchymatous tissues,) general blood-lettings on the contrary are much more efficacious than the others ; they have the advantage of subtracting rapidly from the vascular system a large quantity of blood, and of extending their influence to the diseased organ itself ; an effect which would not be produced by the slow and sparing flow of local bleedings, which may however be employed also with success in inflammations of the parenchymatous tissues, after general bleeding, when the patient is growing weak, and the irritation is no longer sufficiently intense to provoke sympathies.

We also have recourse to capillary bleedings whenever we wish to produce a small sanguine evacuation. It is the

most suitable mode of combatting all inflammations in children, old people, feeble women, individuals who have been a long time sick, and convalescents. Local bleeding is very efficacious in the treatment of external inflammations, and we may most generally confine ourselves in these cases to its employment. It is necessary to practise it as near as possible to the inflamed part. If, however, the latter is inflamed to a high degree, it is to be feared that the irritation produced by the leeches may be extended to it. Still more should we avoid applying them on inflamed parts themselves, *because the disease would almost always be increased by this method*. We should have this fear when the inflamed organ is situated immediately below the skin and when the inflammation is high; it is better then to bleed from the neighborhood of the inflamed part, than on the diseased place itself, and it is necessary to procure an abundant sanguine evacuation, in order to prevent the effects of irritation of the skin. It is not rare, as M. Labauche observes, to see slight inflammations become very grave because this rule has not been followed; and the case reported by Pliny, of a consular personage who died from the effects of an application of leeches on an inflamed knee, is doubtless an example of this kind.

The repetition of general and local bleedings, and the quantity of blood to be subtracted by each of them should be determined by the intensity of the disease and the strength of the patient. As long as the general and local symptoms of the former are very intense, we should persist in the employment of bleeding, without any regard to the quantity of blood already lost; whatever may be the debility of the constitution, it ought to be resorted to; with the reserve only that it should be practised with more moderation, and we should confine ourselves to capillary bleeding. But there exists a formal contradiction to the employment of sanguine evacuations which it is important to notice and to which M. Broussais often in practice draws the attention of his pupils. We mean the state of exhaustion, of prostration manifested in the last degree of acute inflammations. The smallest loss of blood then is fatal, and several times we have seen the patient expire in these cases a few instants after the falling off of leeches, rashly applied, when the loss of sense and of motion, the lividity of the skin and the smallness of the pulse announced that the vital action was

exhausted by the inflammation. We ought then, always to be cautious in recurring to sanguine evacuations, and to confine ourselves to the employment of sedatives, emollients and revulsives. Equally great as the danger of wandering from this precept, would be the danger of giving it too great an extension by applying it to circumstances which it does not embrace, and by permitting ourselves to be imposed on by false appearances. We know, indeed, that in individuals who have still all their forces, inflammations are sometimes accompanied, from their commencement by an extreme muscular prostration, and total loss of the sensorial functions. Experience shows every day, that if in this case, we practise a bleeding, the pulse soon becomes developed, the action of the brain and the other functions of the nervous system are re-established and the sympathies developed with the greatest activity : so that we are obliged soon to repeat the bleeding. It is then of the greatest importance to distinguish one of these states from the other : and it will easily be perceived, on reflecting, that it is only in the prostration showing itself, at the close of inflammations, when they have arrived at their highest pitch, and when they have existed for several days, that sanguine evacuations are dangerous ; whilst on the contrary, they are imperiously demanded by the state of oppression which sometimes accompanies inflammations from their commencement, when they are violent or when they effect an extensive surface.

All the debilitants we have pointed out above, concur ordinarily in the treatment of acute sanguine irritations ; that is to say of those maintaining sympathies. When the latter are extinguished, and the local symptoms also have lost their intensity, we confine ourselves ordinarily to capillary bleedings, to demulcents and a more or less rigid diet. When inflammations have passed to the chronic state, we most usually unite the revulsive method to debilitants. The latter still form the principal part of the treatment of sub-inflammations ; in truth, we anticipate them by preventing the sanguine irritations from becoming chronic, and it is also by the means we oppose to the latter that we combat them when they are established. What was formerly said on the treatment of cancerous affections, may serve as a model for that of all sub-inflammations.

Nervous irritations demand often like sanguine superexcitations, the exclusive employment of debilitating means.

since, most frequently, they are only the result of a chronic inflammation. We shall see farther on, to what extent we may use those stimulants called antispasmodics, in the treatment of the neuroses. Let us pass on to the examination of the revulsive method.

## ARTICLE II.—REVULSIVES.

We give the name of *revulsives* to stimulating agents, when, by the irritation they produce in one part, they put a stop to that existing in another part—a phenomenon which constitutes *revulsion*. This therapeutic means has been employed for a long time in an empirical manner; but its methodic application can only be determined by a knowledge of the mode of action peculiar to the different organic systems and that of the sympathies uniting them.

Ought revulsion to be distinguished from derivation? We know that the ancients gave this latter name to the stimulation they exercised on a part, not for the purpose of producing a cessation of the irritation of another, but to increase the excitation of the first, which did not possess vitality sufficient for the normal exercise of its functions. Thus most frequently attributing amenorrhœa to a state of languor in the uterus, they administered emmenagogues, that is to say, substances having the property of stimulating it; they applied irritants to the hypogastrium and to the upper internal parts of the thighs; and if they happened to recall the menstrual flow, they attribute this success to the means they had employed to restore the uterus its wonted energy, and they said a *derivation* was produced. But it is evident, that in this case, as in all those of the same order, we must be assured not only of the state of the organ whose mode of action we wish to change, but also of that of the other parts of the organism. Thus, to continue the example we have chosen; amenorrhœa depends most frequently on the irritation of another organ which hinders the action of the uterus, of which, if we may be allowed the expression, it proves revulsive; and then, of this viscus be stimulated, and we succeed in putting a stop to the first irritation, it is evident that we produce a revulsion, and not a derivation. This case is a very frequent one, and physicians unacquainted with the sympathies, have misunderstood it. But if the suppression of the periodical discharge is produced, not by debility consecutive to the superexcitation of an organ, but



by primitive asthenia of the uterus, in giving it, by these stimulants a greater energy, we produce truly a *derivation* in the sense which authors have understood it.

Equally productive in happy results as the employment of debilitants, revulsives receive, without contradiction, more extensive application; they concur often with the first in the treatment of irritations, and they become almost the exclusive resource of the practitioner when the others have failed; but in proportion as revulsive stimulants are useful when the true indications for their employment are understood, are they dangerous when injudiciously applied.—In the second part of my dissertation on revulsion, I have endeavored to establish the principles which should direct the conduct of the practitioner in their employment.—I am about to reproduce here the propositions I there presented on this subject.

I. Revulsives should never be used as long as the inflammation we wish to combat is accompanied by fever; for it is too intense then to be overcome by the artificial irritation, and the sympathies are then so active that this irritation will turn entirely to the profit of the organ already affected, because it is then very susceptible of receiving an increase of excitement. Besides, in this condition, the phlogosis established under the title of revulsive, will not fail to excite sympathetic phenomena and the patient will be overwhelmed by the weight of stimulation.

We have seen also a vesicatory applied on the thorax at the commencement of a pleurisy or a pneumonia, as soon as the patient had been bled and sometimes even before. This practice, we dare to say, is incendiary: by this means new strength is given to the general stimulation. Indeed, the application of a blister almost always produces an excitement in the whole organism; an excitement which is especially felt by the diseased organ. It is necessary then, by antiphlogistics, to overcome the general excitement; and when the disease becomes limited to the inflamed organ, that is to say, when the sympathies have been repressed, we may recur to revulsion, if we fear the passing of the inflammation into the chronic state. Moreover, in order that revulsives may act, is it not necessary that the irritation they produce, should be superior to the one we wish to combat? What success can we hope for by applying irritants on the breast of a man whose lungs are the seat of an acute inflammation?



II. In all or almost all febrile inflammations, it is at first necessary to recur to debilitants or antiphlogistics, in order to destroy the general excitement, or in other terms the sympathetic phenomena ; and when the inflammation of the organ which is the source of all these irradiations is calmed, if we see that it has a tendency to pass into the chronic state, if prompt resolution is not probable, we should resort to revulsives to finish the cure.

III. Revulsive irritants then, should be banished from the treatment of acute inflammations ; there are however cases in which their employment is indispensable.

Thus, in the most acute inflammations of the brain or its meninges, the danger being pressing and the debilitants employed alone being of little efficacy, we associate with them powerful revulsives on the skin ; and this conduct is still farther authorized by the want of reaction of irritations of the skin on the encephalon, particularly if sedatives are at the same time applied on the head. It is not the same with the revulsion established on the mucous membrane of the digestive passages, the effects of which are repeated with the greatest facility in the brain ; we should only allow irritation on the large intestine and the stimulating substances should only be used in enemata.

There are other cases of acute inflammation demanding the employment of revulsives ; for instance, those in which the subject is weak and the congestions rapid. The inflamed organ concentrates on itself all the forces in proportion as the subject is weak : the pulse is then small, compressed and concentrated. A bleeding under these circumstances would produce death in a very short time ; we have but too many examples of this kind. We must then establish as much as possible, the equilibrium, and for this purpose it is necessary to recur to revulsives whose actions are very rapid and are exercised on a large surface of the skin. By these means we soon see the heat and colouration of the latter reappear, the pulse becomes strong and developed ; then we have recourse to antiphlogistics, which are indispensable to overcome a violent inflammation like that we point out.

IV. When inflammations demand revulsives, it is necessary to associate with the latter antiphlogistics and sedatives on the irritated organ : it will thus be withdrawn from the effects of reaction.

Thus when we oppose revulsives to an acute inflammation of the encephalon or meninges, we ought at the same time that the legs are covered with sinapisms to apply ice or a refrigerant mixture to the head, and leeches on the submastoid region. If the action of sinapisms gives rise to a general excitement, we have no fear when acting in this manner, of aggravating the encephalic irritation.

V. Most chronic inflammations are attacked with the greatest success by revulsives; but before recurring to them it is necessary to overcome the sympathies which they in many cases excite; it is necessary to render them perfectly apyretic.

We repeat this proposition because many physicians, who have not recourse to revulsives in the acute stage of inflammations, employ them in all the shades of their chronic state, whether there be fever or not; if the disease be ancient this is sufficient they think to authorize their conduct. Thus, in chronic pneumonias and pulmonary catarrhs, accompanied by fever, we see blisters applied to the chest without any preceding treatment; the antiquity of the disease, the debility of the subject, banish the idea of sanguine evacuation. But the accidents which we have several times pointed out, do not fail to take place, in the greater number of cases; and we should add this conduct to the number of causes, rendering revulsives so often inefficacious or even injurious in the treatment of diseases in which they would have produced the greatest advantages if methodically employed. When then, to continue this example, a chronic inflammation of the respiratory organs, is accompanied by fever, before applying blisters on the thorax, it is necessary to place leeches under the clavicles, without being frightened at the long standing of the disease or the feebleness of the subject. After the flow of blood, the general excitement will no longer exist or will be very much diminished; the local symptoms even will be calmed: then the revulsion will have the happiest effects.

VI. When the disappearance of an irritation which it is important to re-establish, has been caused by the inflammation of another organ, we will not be able to make it disappear by revulsive irritants, if at the same time the latter be not combatted by antiphlogistics.

We often see in individuals who are troubled for a long time with ulcers on the legs, these ulcers become dry, their

suppuration disappear after an excess at table, where the stomach has been highly irritated, or after the injudicious administration of drastic purgatives; we then see all the signs of an inflammation of the stomach come on, which only disappear after the re-establishment of the action previously existing in the ulcerated surface. All authors have seen the necessity of irritating the latter and all have counselled it in these cases. We have often had occasion to see this precept followed; we have seen epispastics applied on the ulcer, the signs of gastro-enteritis have nevertheless persisted, the suppuration of the first not being re-established. In similar cases, when to irritating revulsives, the treatment for inflammation of the digestive passages, was joined, we have seen the latter cease and the ulcer return rapidly to its former condition.

VII. The more robust the patient, the more important the part played in the economy by the affected organ and the more vivid is its irritation, the more difficult also is the revulsion. We should then, in these cases, insist on the employment of debilitants before recurring to revulsives.

Thus, it is evident that it will be much more difficult to bring about a revulsion of inflammation of the lungs than that of the bronchial mucous membrane; and that it would be necessary to precede the employment of revulsives by a greater number of bleedings, to enable revulsives to overcome the inflammation of an organ eminently rich in sanguine vessels, than in those cases where we have only to combat the remains of a membranous inflammation.

VIII. Not only intense inflammations ought not to be attacked by revulsives, but it is the same with those which are very extensive, occupying large surfaces; because it would be impossible for the artificial irritation to overcome the former or at all events it would be so intense that it would itself constitute a serious disease.

Although there might not exist other counter indications to the employment of revulsives in the treatment of peritonitis, for example, what success could be expected from the phlogosis of two or three blisters, opposed to the inflammation of a membrane as vast as the peritoneum?

IX. We should never employ revulsives in subjects so sensible and irritable, as to experience sympathetic phenomena and fever from them; for in this case the stimulation

would be reflected on the diseased organ, the inflammation of which would become more intense.

This disposition can only be known by experience ; for it is difficult to determine *a priori*, whether the constitution of a patient will permit or not the employment of revulsives.— If in the case we point out, we have had recourse to them, and a general excitement supervene, it is necessary immediately to calm the revulsive irritation, and to combat by antiphlogistics, the exacerbation which the affection we were treating has experienced.

X. Whenever irritants applied with the intention of producing a revulsion have caused an exacerbation of the inflammation to which they are opposed, it is necessary not only to calm the local inflammation they have produced, but it is farther necessary to attack anew, by antiphlogistics, the inflammations we have exasperated.

In general, when a subject has any important organ which is very sensible, the employment of revulsives is dangerous and we should recur to other therapeutic methods ; for the irritation may be transferred to this organ.

XI. We have already said, and it cannot be too often repeated, that it is the most sensible organs that receive the sympathetic effects of the irritation of any part whatever ; it is necessary then to study well the idiosyncrasies, in order that we may not be liable to make the seat of revulsion an organ or organic system whose affection would be very dangerous ; an effect which would be almost inevitable, although we had not applied the irritants on those parts, which may receive sympathetically the irritation we had wished to establish in another organ.

This fear is not theoretical, it is justified by experience ; a mass of facts attest that, in many cases, irritants of one part, by making the inflammation of another disappear, do not establish the seat of revulsion on the first, but on another organ sympathizing with it. It is thus that Professor Richerand says he has often seen a pleurisy and an effusion of pus take place in the chest after the suppression of ulcers on the legs, caused by table excesses.

XII. It is necessary to be very circumspect in the employment of revulsives on an organ whose irritations are dangerous, which easily take on a serious character, and have a great tendency to be communicated to other parts, on account of the strict sympathies existing between them.



We wish to distinguish especially here the digestive mucous membrane, which receives so easily the sympathetic influences exercised by other organs, and which transmits so rapidly to them the affections it experiences. Doubtless if it were not for this last circumstance, revulsions exercised on the digestive mucous membrane would be, in the greater number of cases, more useful than those established on the skin. It is very easily irritated; it offers to stimulation a large surface which the same irritating substance may excite in a short time: but it is so difficult to maintain this phlogosis in such bounds that it will not become dangerous, both by the phenomena in the diseased tissue, and by the sympathies following as soon as it has acquired a certain intensity, that we cannot be too circumspect in the application of revulsives on this membrane. No one can render it the seat of revulsion with advantage and safely, without being well acquainted with gastro-enteritis.

XIII. The irritation established under the title of revulsive, should always be sufficiently intense to overcome that to which it is opposed; otherwise it turns to the profit of the latter.

This precept is founded on this law of pathological anatomy, so often repeated—the action which is strongest hinders the weaker one. There is then two motives for not employing revulsives when an inflammation is in its acute stage: 1st, because it is too strong for an artificial irritation to produce a revulsion; 2d, because there exists a general train of excitements, to which the second irritation will add new principles, from whence will necessarily follow an exacerbation of the inflammation we wish to combat, since the more a part is irritated, the more susceptible it is of receiving an increase of irritation.

XIV. If it is necessary, in order to produce revulsion, that the artificial irritation be more intense than that to which it is opposed, it ought not, however, to possess too great violence; for reacting in its turn, it will excite sympathetic phenomena which will constitute a second disease.

When then we see a phlegmon come on, an inflammation of the parotid which diminish the intensity of the symptoms of the original affection, we ought not to interfere with them: but if we see these increase because the revulsive inflammation has too much force, it is necessary, by antiphlogistics, to



moderate the violence of the latter, or the disease takes on a greater intensity.

XV. Revulsives ought to be applied on a part whose sympathetic connexions with the irritated organ are such, that the actions of the two are always in an inverse ratio to each other.

The skin and lungs having reciprocally this relation of action, the employment of cutaneous irritants, in the treatment of inflammations of the respiratory organs, is truly the triumph of revulsion. It is indeed in these diseases that it receives most extensive and useful application. In order to foresee the efficaciousness of blisters in their treatment, it is sufficient to recollect, that the action of the skin and that of the pulmonary mucous membrane, are in an inverse ratio to each other. We know that when the cutaneous perspiration is checked by the influence of cold, that of the lungs is augmented; and this augmentation not being able to take place unless its organic properties become more energetic, we can see how coldness of the skin produces pulmonary catarrh; reciprocally, heat augments the energy of the skin's action and diminishes that of the pulmonary mucous membrane. This is the reason why inflammations of these organs are more frequent in cold weather and cold climates than under opposite circumstances; and why we see so many pulmonary diseases in cold and humid countries. General experience has confirmed also the happy results of irritation on the skin, methodically applied in the treatment of inflammations of the lungs and its appendages. How many pneumonias, pleurisies, bronchites, pass into the chronic state, and lead to pulmonary consumption, which would not have had this unhappy result, if the revulsive method had been skilfully opposed to them before disorganization came on!

XVI. We should never apply revulsives on a part whose affections have a tendency to be reflected on the organ whose irritation we wish to combat; because we will increase the latter.

We will cite a remarkable example of the case we have pointed out. The most intimate sympathetic connexions unite the skin and digestive mucous membrane, but these sympathies, very different from those existing between the skin and pulmonary mucous membrane, are such, that the one constantly participates in the affections of the other; an irritation of any intensity on the skin is always repeated in

the digestive passages. This assertion is based on a mass of facts ; it will suffice to cite the frequency of gastro-intestinal irritations in hot weather and climates, where the skin is constantly stimulated, and the concomitance of gastro-enteritis in all acute cutaneous inflammations. The knowledge of these facts alone would be sufficient to enable us to foresee that revulsives can only have an injurious effect in the treatment of gastro-intestinal inflammations ; but this fear is confirmed by experience. All physicians who have studied gastro-enteritis, have seen blisters add, in almost all cases, to the intensity of its symptoms ; we have collected numerous instances at the Val-de-Grace ; M. Broussais also has renounced them in the treatment of *idiopathic fevers*, no matter at what stage they have arrived. "Blisters," says the author of the *Examen* "often augment gastro-enteritis, because the inflammation they produce adds to that of the digestive mucous membrane instead of operating a revulsion of it : they do not then afford the benefits expected from them in the degree of these diseases designated by the words *adynamic fever*." We should doubtless respect the revulsive irritations spontaneously established in the course of a gastro-enteritis, but only when they diminish the intensity of its symptoms. In all cases, on the contrary, when these irritations add to the force of the disease, we should combat them by antiphlogistics.

In cases where gastro-enteritis is the result of the disappearance of inflammation of the skin or subjacent organs, it is necessary to employ revulsives to recall the latter ; but it is at the same time necessary to recur to the application of leeches to the epigastrium and to the administration of demulcents. We may also oppose cutaneous revulsives to the hemorrhagic irritation of the digestive mucous membrane, when antiphlogistics have failed. "Intestinal hemorrhages," says the professor of the Val-de-Grace, "demand blisters on the abdomen, because these hemorrhages produce anemia of the viscera which prevents the blisters from being injurious."

XVII. From the two preceding propositions, it results that we have laid down a precept too exclusive, and for this reason injurious, in establishing that, to combat the inflammation of an organ, it is necessary to apply revulsives on a part sympathizing with it. It would be necessary to point out the mode of sympathies, since revulsives are not

useful except under circumstances where the relation is such, that the affections of the two organs have an inverse relation to each other.

XVIII. When an internal irritation has made an external one disappear, it is on the seat of the latter that we should apply revulsives.

We have also laid down a precept too exclusive, in establishing that, revulsives ought to be applied *loco dolenti*, in visceral inflammations. We would succeed much better in making a herpetic eruption reappear, by placing a blister on the place which it occupied formerly, than by applying it on the point of the skin corresponding to the painful part.

XIX. Revulsive means should not be distinguished only in reference to the different intensity of the inflammations they produce, but also in reference to the nature of their action. Under the latter point of view, we ought to divide them into two classes: those which irritate only, and those which procure at the same time a sanguine depletion from the part. These latter are scarified cups and leeches.

The revulsive means of the second class have a very different action from those of the first: they scarcely ever give rise to reactions, on account of the local bleeding they produce; a contrary effect is also obtained when they are employed with too much timidity. They alone are suitable in all cases where the others cannot be applied, that is to say, when there is fear of a sympathetic influence on the diseased organ. Every leech represents a small scarified cup; and we should not hesitate to range these animals amongst the revulsive means. To be convinced that they cannot act except in this manner, it is sufficient to recollect the happy effects which they procure in gastro-enteritis, when applied to the epigastrium. Do they produce this result by diminishing the mass of blood? General bleeding then, should cause the same result with much more facility; but this is far from being the case. Do they act by preventing the afflux of blood to the stomach, by influencing directly its capillary system? There is no vascular communication well demonstrated between the stomach and skin of the epigastrium; for we cannot regard as such the vessels of the thin fine cellular tissue forming the communication with the cellular structure of the skin on one part, and with the coats of the stomach on the other. We must then regard this as a revulsive action, but very different, on account of the si-

multaneous sanguine depletion, from that of a blister which applied to the epigastrium, in a gastro-enteritis, would give rise to the most formidable accidents.

Let us remark indeed, that the cutaneous irritation produced by a scarificator or leeches, is incessantly counterbalanced by the capillary bleeding accompanying it, and that if it is sufficiently powerful to overcome the irritation it is opposed to, may not be sufficiently so to provoke sympathies which would be reflected on the most sensible parts, and consequently on the one whose irritation we are combatting; an effect which a blister opposed to acute irritations almost always produces. Let us add another proof in favor of this opinion; we know that the application of a small number of leeches opposed to a pleurisy, an angina or an acute gastritis often adds to their intensity. How could this result take place, except by the sympathetic influence the cutaneous irritation which a too feeble flow of blood does not sufficiently counterbalance?

XX. The nearer the inflammation (of which we wish to produce a revulsion) is to the acute stage, the farther we should apply revulsives from the seat of it: by using this precaution we have less to fear from the sympathetic reactions. The more chronic the irritation, on the contrary, the nearer the point of revulsion should approach its seat, unless there exists another part united with the latter by anatomical or sympathetic connexions so strict as to render it preferable. Thus in a chronic ophthalmia, revulsives will have more effect, applied to the nape of the neck than to the temporal region.

XXI. When an inflammation is chronic and profound, when it affects an organ rich in capillary vessels, the revulsive irritation which we oppose to it ought to be permanent, to extend to a certain depth, and to be kept up for some time after the cure of the disease.

Thus, we should not be contented to irritate the cutis in the cure of a pulmonary catarrh or chronic pneumonia; to become revulsive, it is necessary that the external inflammation extend to a greater depth, that it penetrate to the sub-cutaneous cellular tissue. We obtain more marked effects from the application of moxas, of setons on the breast, and their employment has cured a great number of chronic pneumonias which would have, without doubt, brought on disorganization.



XXII. When revulsives have not overcome a chronic inflammation, but have not added to its intensity, we ought to persist in their employment and render them more energetic.

This precept seems to us of the highest importance. In general we abandon revulsives too soon when they do not produce at first the effect we expect from them ; and there are many chronic inflammations producing disorganization of the tissues they affect, which often would not have had this dreadful termination, if revulsives had been opposed to them in a more methodical manner. Assuredly, we should not submit those unfortunate creatures whose destruction is certain, to painful means of treatment ; but it is so difficult to possess this certitude ! The signs even of disorganization should not induce us to renounce revulsives ; we will take for proof, *phthisis pulmonalis*. Do we not after the softening of a tuberculous mass, see the cavern resulting from it, cicatrize sometimes by the organization of a false membrane on the surface of its parietes ? (M. Laennec) If in these cases disorganization does not come on in other parts of the lungs, the patient is cured. It is then, only by combatting the chronic inflammation producing disorganization, that we can obtain this happy result.

XXIII. It is not to inflammations alone that we should oppose revulsives, but also to a great number of neuroses and hemorrhagic irritations.

XXIV. Revulsives are not always opposed to a disease actually existing ; in many cases, we also keep up an inflammation externally, as a preventative in very irritable subjects.

This prophylactic method is very useful and is not resorted to as often as it ought to be. There are individuals whose susceptibility is such, that they cannot be submitted to the least exciting influence, without experiencing an irritation of some organ ; an *opthalmia*, *angina*, *dyspnœa*, pains in the chest, &c. If in these individuals we maintain a blister or an issue, this point becomes the rendezvous, thus to speak, of these fugitive irritations which all exciting modifiers, give rise to in them ; thus, after coition, a table excess, &c. the point of permanent irritation becomes more red, painful and the health is not disturbed.

XXV. When by a surgical operation, or medical means, we wish to suppress an ancient focus of inflammation and



suppuration, we ought, before attempting a cure, to open one or several issues, in order to prevent the accidents which might result from the suppression of an external inflammation, become in some sort habitual to the economy.

XXVI. To ask whether we should wait for spontaneous revulsions, (crises and metastases,) would be starting the question, whether we should await a repetition of the inflammation in other organs, in viscera whose lesions are very dangerous; whether we should risk the passing of the former to the chronic state and to the disorganization of tissues.

We are called to a patient to treat him and not to contemplate the phenomena of nature—at least in serious diseases; also, in all cases where an inflammation may bring on dangerous consequences, it is necessary to combat it with the greatest activity; and without regard to what has already been done, only stop when it is terminated, or when we are assured that resolution will take place; unless the debility of the patient be such, that the employment of active antiphlogistics is no longer permitted. In cases on the contrary, where the inflammation affects an organ of little importance, and where it is not of a serious character, we may wait for sweats, diarrhœa, &c. and content ourselves with removing the causes of irritation.

XXVII. Ought we to respect crises and metastases?—Yes, if they promise to be useful; not if they may be dangerous.

It is impossible to answer this question in a general manner; the importance of the organ which is the seat of the spontaneous revulsion, the degree of its irritation, the susceptibility of the patient, the facility with which the sympathies are exercised in him, will regulate the conduct of the physiological practitioner.

### ARTICLE III.—STIMULANTS.

The third class of antiphlogistic means comprehends other stimulants than those we use with the intention of producing revulsion. The physiological doctrine has singularly restrained their employment in the treatment of irritations. M. Broussais combats, in the most victorious manner, the frightful abuse made of these means even in our own time. The new knowledge furnished by the physiological doctrine, on the greater number of diseases, ought to proscribe this

plan of treating most irritations ; but to appreciate the effects of the latter at their just value, it is sufficient to verify the success which has been attributed to it. In pursuing this examination, we are soon convinced that, in many cases, the patients have got well in spite of the treatment, after having struggled as we have often said, against the disease and doctor ; that, in others these disturbing means have not had unpleasant results, because they have excited a crisis, that is to say, they have extended their influence to other parts than that which has been stimulated, and have thus provoked a revulsive irritation. " This explains," says M. Broussais, " why all superirritated gastro-enterites are not mortal." Indeed, when these diseases have been treated by tonics, we observe almost constantly critical phenomena, which are seen very rarely under the antiphlogistic treatment. In short, we may remark that many stimulants provoke evacuations productive ordinarily of a momentary relief ; but that in the greater number of cases, the irritation persists, and is often increased in intensity. It is thus we may explain the vogue, of diuretics, sudorifics, and particularly of purgatives, employed with profusion in treating irritations of the intestinal canal and other abdominal viscera. It is incontestable however, that stimulants are often the most precious means in the treatment of superexcitations ; such are those we oppose to intermittent irritations in the interval between the paroxysms, to syphylitic, herpetic, psoric sub-inflammations, and even sanguine irritations of the skin and mucous membrane. How can we explain the cure of an irritation by a stimulant, whose action extends to no other part than that on which it is applied ? It would seem to us as impossible as superfluous to attempt it ; the facts exist ; let us content ourselves with establishing them, and with making them turn to the profit of therapeutics.

Enlightened by the principles of the physiological doctrine, and resting on the authority of a great number of celebrated practitioners, M. Vallée has shown in his thesis, the danger of the disturbing method and of divers classes of tonics, in the greater number of diseases. The errors he combats are still too much credited, and his thesis presents of itself, too much interest not to merit an extended analysis.

In order to examine all the counterindications, which are presented in the employment of the different medical means, M. Vallée has formed several groups of those having anala-

gous properties ; and, surveying the nosographic table, he searches out all the circumstances opposed to the employment of each class of medicaments.

*Tonics and Stimulants.*—Plethora is regarded by all practitioners as a formal counterindication to the employment of tonics and stimulants ; it is easy to conceive how much they favor congestions in the organs they act on, since there exists then a great disposition to irritations in the whole economy. The inflammatory diathesis is not always accompanied by plethora, but it proscribes as formally as the latter the employment of stimulants, under whose influence we would soon see inflammations or hemorrhages manifested. When these have taken place, we should proscribe with still more care tonics and stimulants of all kinds, except when they put on the intermittent type, and in some other very limited circumstances hereafter to be indicated. If we sometimes see forming inflammations disappear after a stimulating drink, which has not been injurious because it provoked a critical evacuation, that is to say a revulsive action ; if we have not unfrequently seen astringent applications cure at their commencement an ophthalmia or gonorrhœa by a new modification of the organic action of the part, we ought to regard these examples only as happy events not to be hoped for, and a physician should never follow a hazardous practice, when he possesses means more certain in their effects. Tonics are not less dangerous in the inflammations of weak individuals than under any other circumstances ; we should not then administer them under the pretext of favoring reaction ; for they will only add new energy to the inflammation, or they will extend the irritation to other organs. Sydenham formerly denounced the bad effects of the stimulating method in variola and other eruptive inflammations ; and in spite of some cases of exantheams cured by this method, prudent physicians have followed the practice of the English author. However, a great number have still recourse to tonics whenever they think adynamia is to be dreaded. They are ignorant that they thus add to the danger of the internal inflammations which produce the prostration or disappearance of eruptions. Of all inflammations, there is not one which yields less to tonics and stimulants than that of the gastro-intestinal mucous membrane ; and unhappily it is in this disease that they have been most lavished, on account of the external debility often accompa-

nying it, and of the complete ignorance we were plunged into, previous to the labors of Broussais, on the origin of the symptoms by which it is manifested. This subject will be treated with all the details belonging to it, in the history of gastro-enteritis ; it is sufficient here to point out the circumstances which should warn the physician to resist the temptation to stimulate, when this inflammation is united with some indication for tonics. He should abstain from them whenever he observes redness on the borders of the tongue, thirst, loss of appetite, dryness and heat of skin and frequency of the pulse. M. Vallée correctly observes that these are the symptoms of well marked gastro-enteritis, and that there exists many other grades of this disease, which, though presenting themselves with less marked characters, do not the less on this account forbid the use of stimulants. We cannot then study too closely all the degrees of this inflammation, since the state of the digestive passages must modify, at every instant, the conduct of the physician. We must say the same thing of the diarrhœas which frequently complicate the last period of chronic inflammations ; as they add to the debility, we see most physicians then administer tonics, whilst it is only by emollients, &c. they can cure the inflammation of the colon giving rise to this disease. It is the same in cholera morbus, produced by a gastro-enteritis joined often to a more or less acute irritation of the liver. The only reason why it makes such ravages in India and America is because they lavish the most active stimulants on those affected by it ; it only affects so great a number of individuals because they make use of the same means, under the name of preservatives, when this affection reigns epidemically.

Stimulants are also introduced into the treatment of inflammations of other mucous membranes. Every one knows the use generally made of balsamics, scillitics, kermes, and other *incisives*, at the decline of pulmonary catarrhs and pneumonias, and in the chronic state of these diseases. When these substances do not produce a revulsion on the stomach, they add to the inflammation of the organs of respiration ; for we know that they have the property of stimulating the bronchial mucous membrane.—When they cure, we again say, it is only by irritating the stomach ; and to be convinced of this, it is sufficient to recollect that physicians have given, in the same cases, ipe-



vacuanha in small doses, repeated every morning, so as only to produce nausea. They make also a great abuse of balsamics and astringents in the inflammations of the genito-urinary mucous membrane. They are often advantageous, it is true, when these affections are for a long time chronic, when the heat, redness and pain have disappeared, and when they are no longer manifested except by the augmentation of the secretion of the membrane ; but then they ought to be employed with the greatest circumspection, principally in women, in the treatment of vaginal catarrh. We cannot too much blame those practitioners who treat the most acute cystitis and urethritis by stimulants, because they succeed in the chronic state of these affections. How many cancers of the neck of the uterus, suppressions of the menses, severe ophthalmias, strictures of the urethra, sub-inflammations of the testicles, chronic cystites, are the result of the employment of astringents in the treatment of inflammations of the genito-urinary mucous membrane !

The tonics given generally in chronic inflammations of the serous membranes and the parenchymatous organs only prolong and augment the intensity of chronic pleurisies, peritonites, pneumonias and hepatites. It is to their abuse we owe the greater part of the disorganizations brought on by these inflammations, and it is also the stimulants as well as the sympathies provoked by them, which produce the gastro-enteritis that complicates these affections and accelerates the destruction of patients. We may say the same of the chronic inflammations of the muscles and of the fibro-serous system of the articulations. If sudorifics are sometimes useful in chronic rheumatisms, they almost always add to their intensity when acute ; and if we wish these to produce a revulsion on the skin, it is only by the substances, authors have called cold sudorifics, that is to say, warm aqueous or acidulated drinks.

Whatever be the stage of the inflammation of articulations and the constitution of the individuals affected, tonics ought always to be proscribed in the treatment of this inflammation, since, as we will see farther on, it is often sympathetic of a gastro-enteritis, acute or chronic ; and that in cases where it is primitive, the inflammation of the digestive mucous membrane often complicating, it brings back its paroxysms more frequently, and renders them more intense.

Hemorrhages are one class of the diseases in which ton-

ies have been most abused. Whenever they were accompanied by debility and were not preceded by the hemorrhagic effort, (*molimen*,) remedies of this class were administered to counteract the relaxation and debility to which they were attributed. But it is only by changing the hemorrhagic irritation into inflammation that they stop the flow of blood. They substitute a more serious affection for the one previously existing. Thus arise gastritis, chronic pneumonia, metritis, so frequently observed, when stimulants are opposed to hæmatemesis, hæmoptysis, menorrhagia, &c. We should never have recourse to tonics and astringents, when the hemorrhage takes place from an organ whose inflammations are dangerous. We should then always confine ourselves to blood-letting, demulcents and diet, and recur to revulsives if these means fail, and the weakness of the patient does not permit us to use them farther.

We have already shown, sufficiently in detail, that organic disorganizations were only the result of chronic inflammation; and we have cited so many examples of cures by the antiphlogistic method, that it is unnecessary for us to stop and show that these affections are aggravated by opposing to them, as has often been done, tonics of all kinds.

The physiological doctrine banishes these means of treatment even in scurvy, in which they have been administered with profusion. We do not speak of febrile scurvy only, that is to say, that accompanied by visceral inflammation; the contradiction here is so palpable, that any one, no matter how little versed in physiology, must know how to appreciate it. But this proscription extends also to cold scurvy.—M. Broussais has shown that this disease was not the result of weakness, but an alteration of sanguification and nutrition, which are developed under influences totally different from debilitants, and that it can only be remedied without danger by a pure, dry and warm air, by a vegetable regimen, and vegetable acids. All this crowd of stimulants, of acrid substances, lavished under the name of scorbutics, are only fit to develop inflammation of the viscera, to which these patients are more disposed than other individuals. If some light tonics are permitted, old wine for example, it should only be in cases where the digestion languishes, is painful, and where the defect of action in the stomach depends in reality on its asthenia.

M. Vallée observes, that the neuroses are the diseases in

which the administration of stimulants and tonics, given under the name of antispasmodics, has least inconvenience; we ought, however, to denounce this practice also as dangerous, in a great number of these affections. Let us remark, indeed, that purely nervous irritation is most frequently transient; then we administer stimulants; but when the irritation affects for some time the nervous capillaries of a mucous membrane, it is almost always partaken of by the sanguine vessels. Let us farther observe, that those phenomena called nervous, manifested in other parts than those in which they have their source, are only the results of sympathies provoked by a chronic inflammation in an individual whose nervous system is predominant and consequently more irritable than all the others. M. Broussais has shown that most of the pretended digestive neuroses, dyspepsias, gastrodinias, *spasmodic* vomitings, hypochondria, &c. were only grades of chronic gastro-enteritis, that they are sometimes even provoked by the disorganizations brought on by the latter. Let them judge then of the effects on the stomach of all the tonics lavished in these cases. We would say the same as to the neuroses of generation. Hysteria and other nervous affections so common with many women, are nearly always the results of a chronic irritation of the uterus, accompanied very often by that of the stomach; we observe always that these women only experience relief from the use of émollients, baths, habitual exercise of venereal enjoyments, or on the contrary, abstinence from coition, according as the disease is produced by privation or abuse of the pleasures of love. And every one may observe that stimulants lavished on those patients, under the title of antispasmodics, only deteriorate the constitution, aggravate and perpetuate the disease. The recent labors in pathological anatomy have very much restrained the number of neuroses of respiration and circulation; there are, however, certain troubles of these two functions which are truly the results of nervous irritation: in these cases we ought to recur to antispasmodics; but in this case, as in every other, we should always take scrupulously into account, the state of the stomach; for a substance, which would be an antispasmodic if this organ were sound, would produce a contrary effect if it were irritated, because the increase of its irritation would developé sympathies which would be felt by the organs whose action we wished to modify. The truth of this

proposition will soon be demonstrated in an article consecrated to the examination of the properties of digitalis. It is superfluous to point out the dangers of stimulants in the neuroses of locomotion, since they are the symptoms of an irritation of the sensitive centre and its envelopes.

Before following M. Vallée in the examination of another class of medicines, we should say a few words of a theory as strange as erroneous, which has been in vogue for several years in Italy, and which is even spread amongst some physicians, who admit with much more facility, the most absurd opinions, originating beyond the Alps, the Rhine, or the Thames, than the truths discovered by their fellow citizens.

When Brown attributed the phenomena by which life is manifested, to the action of stimulants, on the organized tissues, he asserted that there did not exist debilitating agents, and that those regarded as such, were only stimulants whose less energetic action determined too feeble an excitement. Whilst pursuing most of the fundamental dogmas of Brownism, Rasori and his disciples, have admitted on the contrary, the existence of agents which exercise on the tissues an action opposed to that of stimulants, which destroys consequently the effects produced by the latter, and which may give rise to diseases not to be cured except by excitants. Hence the origin of *counterstimulus*. The Brownists of Italy regard as *counterstimulants* not only cold, bleeding, and mucilaginous substances, but also purgatives, emetics, digitalis, all the bitters, the greater part of mineral medicines, amongst which they count scarcely any stimulants. One must be very little advanced in the study of pathological physiology, to regard as *counterstimulants* the preparations of aloes, antimony, &c. because the irritation they have produced in the intestinal canal has cured a pleurisy. "The Italian physicians," says M. Broussais, "have then never observed obstinate vomitings and hypacatharsis, which are only gastro intestinal mucous inflammations, produced by emetics and drastics?" The author of the *Examen* is justly astonished, that they could attribute these effects to counterstimulants, and he asks if they are different from those produced by other stimulants, and if there be not a perfect identity between the traces left by the pretended counterstimulants in dead bodies and those of diseases whose inflammatory character is avowed. "If sometimes," says M. Broussais, "the *counterstimulators* have seen diseases of



irritation cured, to which they apply excitants decorated with the title of counterstimulants, it is, either because they have paralyzed their perturbing effects by copious bleedings, by regimen, and by the abundance of aqueous and mucilaginous liquids with which they had associated them, or because there came on a revulsive evacuation."

It is then evident that the substances ranged amongst the counterstimulants by the Italians, are for the most part only excitants which diminish the irritation of another part than that on which they are applied, by determining in the latter a revulsive action; and that counterstimulants, properly speaking, are only the agents we have before spoken of under the title of debilitants.

The unfortunate results arising from the absolute want of application of physiology to pathology are particularly remarkable in this theory of the Brunonians of Italy. Is it still necessary to remark, that they have been led into this error by the habit of studying the economy in mass, as a homogeneous whole, if not in structure, at least in phenomena? Because the use of emetics or purgatives by irritating the intestinal canal cures an ophthalmia or an erysipelas they are counterstimulants! According to this rule, cantharides, moxa and actual cautery are also counterstimulants. Is it not evident, that counterstimulation is here only indirect, is but the consequence, the *contre-coup* of the irritation produced by these agents in the part on which they have been applied?

*Narcotics.*—M. Vallée examines, as he has done with regard to tonics, the circumstances counterindicating the employment of these medicines, amongst which he selects opium as a type. Though in general medicines of this class are not abused as much as those of the preceding, it is not less important to designate the circumstances where their employment may be dangerous.

The disposition to cerebral congestions, very often accompanying plethora, suffices to banish opium from the treatment of affections to which this condition of the economy is joined. We ought also to be very circumspect for the same reason, in its employment in children and old people, as there exists a strong disposition to cerebral congestions at these two periods of life. Sleeplessness is one of the circumstances which determines physicians most to recur to this medicine; its employment however, may often have in

this case dangerous consequences. Whenever this condition depends on high excitement of the brain, opium evidently will only add to the latter; if the insomnolence is the result of stimulation produced on the brain by an inflamed organ, the best calmants then will be antiphlogistics. What we say of insomnolence is applicable to the pain depending on an inflammation; it is absurd then to attempt to calm it by narcotics; we cannot succeed in this, except by means proper to extinguish the inflammation producing it. If we succeed in these cases in silencing the pain, it is only by throwing the patient into a state of stupor, which checks all the functions by blunting the sensibility, and which rendering the sympathetic phenomena more obscure, no longer permits us to judge of the state of the inflammation. Let us moreover observe, that the cerebral congestion which it determines, may have by itself the most serious consequences. In the contrary case where the pain results from a purely nervous irritation, we may oppose it with success and without danger by narcotics. All physicians agree in proscribing opium in the treatment of acute inflammations. It is very remarkable that it adds to the general stimulation, at the same time that it blunts the cerebral sensibility, by determining a dangerous congestion in the encephalon. We should observe also that opium thrown into an inflamed stomach, stimulates it very actively, to such a point that we have seen the tongue often become dry and fuliginous after the administration of this medicine in gastro-enteritis.—Perhaps it may be employed at the commencement of some external inflammations with advantage; at least, we have sometimes cut short gonorrhœas by introducing into the fossa navicularis, at the time when the ardor urinæ announced the development of urethritis, a cylinder of crude opium formed by softening it in water. We will extend the prescription of opium, already banished by most practitioners, from the treatment of acute inflammations, from that of chronic inflammations also. If sometimes in this condition, as in the former; it has procured good effects, it is only by the property it possesses of producing perspiration; and it is doubtless to this revulsive action that we should attribute Doctor Husson's cures of *bilious fevers* from laudanum, reported in the *Annuaire medico-chirurgical* of the Paris hospitals. But in the incertitude of obtaining this revulsive action, we ought to abstain in the phlegmasiæ, from narcot-

ics as well as tonics, since they may add to the intensity of the inflammation. There is, however, a case in opposition to this principle : M. Broussais has established, indeed, that opium produces advantageous effects in chronic colitis, when there is no longer pain, fever, nor tenesmus, and when the dejections are no longer sanguineous, nor very abundant.

Narcotics then, ought to be restrained to the treatment of irritations purely nervous. We may also recur to them with circumspection for the purpose of calming the pains accompanying certain disorganizations ; finally, surgery reaps also great advantages from it, in limiting the progress of several ulcerations, and especially of those kept up by a syphilitic affection.

*Emetics.*—So great an abuse has been made of this class of medicines, that there are very few diseases to the treatment of which they have not been applied ; in other words, there has scarcely existed a disorder that has not drawn down the fury of this method, which at different periods has invaded practice of medicine. Its success in cold climates, and in persons not very irritable, and the humorism which has blinded physicians during so many ages, has given it credit in countries and amongst men, far from being under the same conditions. In vain did the frequency of its fatal effects and the extent of its ravages exclaim against this practice ; in vain did a great number of physicians, among whom we remark principally Hoffman and De Haën, revolt against its dreadful consequences and attack it with vehemence ; routine and the spirit of system carried the day. Prejudice has resisted the evidence of facts and the most convincing reasoning ; and we shall still for a long time have to groan over the obstinacy of those men, in whose eyes the antiquity of a method is a title to infallibility. Humanity, however, has already perceived the benefits of the vigorous opposition raised by M. Broussais against this practice ; and among the many services he has rendered, the latter will be signalized as one of the most important.

M. Vallée has presented all the counterindications opposed by temperament, sex, and the nature of diseases, to the employment of emetics. Although we shall have to speak again in detail of the danger of emetics in gastro-enteritis, we should nevertheless bring forward here what this physician has written on the counterindications to this method, since it has been applied to all diseases.

The sanguine temperament and plethora forbid emetics on account of the influence of vomiting and of irritation of the stomach, on the production of apoplexy ; so also with early infancy and old age. Stoll abstained from emetics in old men for fear of cerebral congestions. The nervous temperament also is a formal counterindication to the employment of these means, on account of the great irritability of persons endowed with it. It is not rare to see emetics produce in them spasms, convulsions, and other nervous affections. It is sufficient to know that the bilious constitution depends on a great irritability of the liver, joined to a like condition of the stomach and duodenum, to proscribe emetics in the treatment of the diseases of individuals possessing this temperament. It is remarkable, that it is in these cases physicians, deceived by false appearances, have recommended them most. Why have they not treated pyalism by sialogogues ? To be consistent they ought to have done it ; they would not have been more absurd in the one case than in the other : it is true that they were ignorant that the bile vomited did not pre-exist to the administration of emetics. Individuals of a lymphatic constitution, relaxed, loaded with obesity, and endowed with obtuse sensibility, are those in whom emetics produce the least injurious consequences.— This circumstance is not sufficient to determine us to have recourse to them. Emetics cure inflammations only by producing a revulsion ; now, as the stomach is almost always the seat of it, and as in lymphatic individuals, gastritis is more dangerous than in others, on account of the facility with which it passes into the chronic state, we should treat their inflammations by other means ; and if it be necessary to recur to revulsion, we should establish it on organs of less importance. Debility also is opposed to the employment of emetics. In weakly individuals, the organs are generally very irritable, and the state of violence into which emetics throw the economy, would produce almost infallibly a congestion in some one amongst them. We should be still more circumspect in the employment of emetics in women than in men, on account of the greater susceptibility of the former, and their more marked aptitude to nervous affections. We should interdict them rigorously during the menstrual flow, for fear of giving rise to menorrhagia, or on the other hand, to suppression of the menses. Most physicians have prohibited them also during gestation, because they expose



women to menorrhagias and abortions. The lochial flow is a positive counterindication to the employment of emetics, not only on account of the danger of their suppression, but because all the abdominal viscera are then in a state of extreme irritability, and because the stimulation of the digestive passages and the efforts of vomiting might give rise to serious inflammations.

M. Vallée remarks that there are few inflammations which do not forbid the use of emetics, principally when they are sufficiently intense to provoke sympathies perceived by the viscera, and particularly the stomach. As this organ, however, presents signs of irritation from the commencement of almost all inflammations, physicians saw an indication for giving emetics, because they are attributed to a saburral condition: thus at the commencement of cutaneous inflammations they administer an emetic; having the idea of a morbid principle to be expelled, and knowing the diaphoretic property of this medicine, they propose by this means, to favor the eruption; and the same principle is extended to those cases in which the exanthem disappears. But we know now, that eruptive inflammations are prepared by a gastro-enteritis, that it is by this that the disease commences, that the eruption is always proportioned to its intensity, that it only disappears by the exacerbation of the gastro-enteritis which produces a revulsion of it. Is it not evident that to administer emetics at the commencement of small pox, is to endanger the production of a confluent eruption, and that in giving them to recall the latter, we add to the intensity of the gastro-enteritis, the cause of all the mischief?—Erysipelas symptomatic of a foul stomach (*embarras gastrique*) seems to form an exception in favor of emetics, says M. Vallée. We do not agree in this opinion; for it is granting that it is preferable to treat the first degree of gastro-enteritis by emetics rather than by diet and emollients. We shall see farther on, what method has most advantages and particularly least inconvenience.

It would seem puerile, as M. Vallée observes, to place gastro-enteritis at the head of mucous inflammations, as positively counterindicating emetics, if we did not know the frightful abuse heretofore made of them, and which too many physicians make of them in foulness of the stomach, (*embarras gastriques*), and fevers, which were only gastro-enteritis, exasperated by this treatment until they put on

the adynamic character, against which the formidable array of tonics opposed to them, failed. This subject will, in another place, be examined in detail ; let us be contented here with establishing a general principle which should admit of no exception ; whenever signs of gastro-enteritis exist, we ought to abandon the idea of giving emetics, notwithstanding all the signs indicating an overcharge of bile, or sordes of the *primæ viæ*. M. Vallée remarks, that the inflammation of other parts of the digestive canal, is no less an enemy to emetics, because it rarely exists, without the stomachs participating more or less, and because the revulsive effect they sometimes produce in dysentery, presents too many unfavorable chances for a prudent physician to have recourse to a practice so hazardous. It is the same with angina ; if it exists alone, it would be erroneous to attempt a revulsion on the stomach, when we can make it rapidly cease by an application of leeches. If it be complicated with irritation of this viscus, both will be cured by antiphlogistics ; and we cannot grant the same innocuousness to emetic tartar, which moreover when it succeeds does not produce such marvellous effects as their advocates seem to think. Inflammations of the serous membranes are so painful, are accompanied with such great anxiety, and awaken so many sympathies, that they should always exclude the employment of emetics.—The employment Stoll made of them in pleurisies and other inflammations of the thoracic viscera, was founded on the influence he attributed to the bile in the production of these diseases. This strange opinion is too superannuated to merit the attention of criticism, and we may affirm that, under another sky, and in individuals more irritable, it would not have obtained the numerous successes, which in other climates, has been the cause of many ravages. Moreover, the whole question seems to us to reduce itself to the following reflections : emetic tartar opposed to inflammations cannot cure them, except by the revulsion it produces on the digestive mucous membrane or the skin, or by the evacuation of the bile, which would be a cause of disease. We repeat it, this opinion will no longer be sustained by any practitioner, and if practitioners otherwise respectable, follow this practice, it is not because they make bile play this part, but because they are prejudiced in favor of the good effects of emetics, and because they have suffered themselves to be deceived by the success of Stoll ; and it is so

true that they depend more upon the authority of authors, than upon the results of their own experience, that if emetics give rise to accidents, they are far from attributing these to the medicines. Let us add also, that the bile vomited has not been secreted in greater quantity, except from the influence of the stimulation of the gastric mucous membrane by the emetic ; in the same manner as the introduction of sialogogues into the mouth produce a flow of saliva. When then emetics produce happy effects in inflammations, it is only by determining revulsions. Now the revulsive method is very dangerous in acute inflammations, nor is there a reasonable practitioner who dares to recur to it in this condition of inflammations. We should not then oppose emetics to an acute pleurisy, and the less so, as they tend to render an organ already too much irritated, and whose inflammations are serious, the seat of revulsion. On the other hand, if the disease become chronic, and we wish to employ revulsives, it is incontestable that they will no where produce effects so advantageous as when applied on the skin, and that there they will be without danger. If we add, that bilious symptoms are the result of a higher or lower degree of irritation of the liver, joined to that of the stomach and duodenum, we will be able to conceive the danger of emetics in diseases called *bilious*.

We see then that emetics ought to be confined in the treatment of inflammations to those extremely rare cases when we should chose the stomach for the seat of revulsion. What we here say of pleurisy, we apply to all other inflammations.

M. Broussais proscribes emetics in every stage of peritonitis ; we see in several cases reported by him, that they have given rise to this disease. According to him the convulsive effects of the abdominal muscles, and the compression resulting from these, in the viscera, may produce this inflammation, when there already exists some predisposing cause, and *à fortiori* exasperate it when it is developed. However imposing may be the authority of Desault, we should forbid them not less rigorously in meningitis ; the influence of the irritation of the digestive mucous membrane in the production of encephalic inflammations, is too well known at the present day for us to be permitted to recur to emetics, when we possess other means of revulsion quite as powerful. Hepatitis, being always conjoined to gastro-duodenitis, will

be exasperated by emetics ; Stoll himself forbids them when it is acute : they should be banished from the chronic stages for the same reasons. They would also be injurious in nephritis and metritis, on account of their connexions with the stomach, and of the violence which these organs, when inflamed, would experience during the efforts of vomiting.— We will not return to pneumonia ; what we have said of the pretended bilious pleurisy, is entirely applicable to this.— The mobile character of articular inflammations, their frequent co-existence with gastro-enteritis, whether acute or chronic, are sufficient to make us see the dangers of employing emetics in their treatment.

They should be banished in all hemorrhages ; besides that they favor and augment congestion, they have here another dangerous effect—that of augmenting directly the flow of blood, by the efforts they excite. We have already pointed out above, the danger of emetics during the flow of the menses ; it is evident then that they would be injurious in menorrhagia, and many physicians moreover, have observed their fatal effects in these cases. Cullen has seen them aggravate hæmoptysis, and all therapeutists have pointed out the dangers in individuals predisposed to this hemorrhage.

The employment of emetics in apoplexy has been the subject of many controversies. The advocates of this method have asserted that they are advantageous by producing a favorable concussion which aroused the action of the brain, and by re-establishing the equilibrium of vitality and producing diaphoresis. Their adversaries have answered, that during vomiting, the blood was driven with violence towards the brain, that this act, being sufficient to produce cerebral congestion, must augment it when it exists. The physiological physicians add, that by the diminution of the cerebral influx, the vomiting having become difficult in apoplexy, we cannot excite it except by enormous doses of emetics which stimulate very highly the stomach ; that the irritation of this viscus is one of the most frequent causes of this disease, and consequently emetics can only add to the danger. M. Vallée has not ventured to decide on this question ; its solution, however, seems to us easy. Indeed we can only give emetics without inconvenience to lymphatic, pale individuals, who are little disposed to sanguine congestions ; moreover, we are not certain of determining a revulsion, whereas



it is easy to produce it on the skin—a method exempt from all danger.

Palpitations, convulsions, and all other neuroses, and still more those of the stomach, are positive counterindications to the employment of emetics. Authors have correctly added to these latter, aneurisms of the heart and large blood vessels, irreducible and strangulated hernias; we may add to these, reduced hernias, for we know that the truss has more than once given way during the efforts of vomiting, and that the hernia has been strangulated by this accident.

*Purgatives*—Humorism has still more abused this class of remedies than emetics, and we may apply to them most of the principles established for the employment of the latter. Like them, they act on the digestive mucous membrane, which they irritate; but they produce, moreover, an evacuation of fluid sufficiently considerable to be taken notice of. Another difference existing between their action and that of the former depends on this—that the latter stimulate the stomach almost exclusively, whilst purgatives act principally on the intestines, and much more on the colon than on the small intestine. Purgatives should also be distinguished amongst themselves according to the degree of their action. Some, indeed, only produce a slight irritation, which seems to be confined to the white vessels charged with exhalation; others, on the contrary, produce a high degree of irritation, carried often even to phlogosis; the former are called ordinarily *laxatives* or *cathartics*, and the latter *drastics*. We agree generally in forbidding purgatives in very feeble individuals, in those having great nervous susceptibility, in those who present a general exuberance of vitality and a marked aptitude to the development of inflammations.—Here, as with emetics, females merit a particular attention; sensibility, generally greater in women, should render physicians very reserved in the employment of energetic purgatives. They should always be abstained from during the menstrual period; they may produce in this function the same disturbances as emetics. The same caution should be observed during gestation, although Hippocrates permits purging from the fourth month to the seventh. We know too many examples of abortions provoked by the mildest purgatives, not to act with the greatest prudence, principally with women who have already aborted. We should prescribe them with severity during the flow of the lochia, for

fear of metastases that take place particularly on the abdominal viscera, to the inflammation of which, women newly delivered are but too much disposed. We should also use great prudence in the employment, and especially in the choice of purgatives during the period of lactation; besides that the milk may acquire purgative properties, it is evident that the nurse is exposed to metastases which may have the most serious consequences.

Hippocrates himself forbids purgatives in the different periods of acute diseases: this precept of the father of medicine has been pretty generally respected. It is in chronic diseases which have remained buried in the greatest obscurity until a very late period, that the greatest abuse of them has been made. Moreover, emetics and purgatives became the familiar and common practice of most physicians; for a long time it has obtained among the vulgar, who puke and purge themselves for the slightest indisposition, and even in a state of perfect health, under the pretext of preventing diseases: thus they excite and keep up those chronic inflammations of the digestive organs, which make so great a number of victims. Let us examine, with M. Vallée, the advantages and the inconveniences arising from purgatives in the different irritations.

We know to what accidents they may give rise in cutaneous inflammations, and the fatal metastases which may be the consequences of them; danger exists even towards the decline of eruptive diseases. Hallé has cited the example of a child who, having been purged during the desquamation of measles, was taken with croup and perished. Of all inflammations, none assuredly repels more decidedly these medicines than gastritis and enteritis in all their stages, since it would be placing the stimulant on the very seat of disease. After what has been said on the employment of emetics in the same disease, we would deem it superfluous to stop for the purpose of showing the exactness of this proposition. Purgatives would be dangerous in the acute stage of inflammations of the genito urinary mucous membrane; they would, in most cases, increase the inflammation and cannot be admissible except in the chronic stage of these inflammations.

Peritonitis forbids purgatives as much as gastro-enteritis, particularly in the acute stage. Besides that the augmentation of the peristaltic movement, determined by these medicines, in the intestines, would irritate the serous mem-

brane, already inflamed, there exists between this and the intestinal mucous membrane a union too intimate for the latter to be irritated without danger to the first. M. Broussais, in this disease, forbids even emollient glysters; as by distending the intestines they must compress the peritoneum. We cannot recur to purgatives except in the chronic state of peritonitis, when we wish to unload the intestinal canal of hard matters which fatigue it, or when we wish to produce a slight revulsion by augmenting the mucous secretion; but we should only permit in these cases oily and saccharine laxatives. Hippocrates has pointed out the danger of purgatives in pleurisy. They are injurious in all inflammations of the chest, acute or chronic—Hoffman condemns them even in catarrh. They are no less so in acute and chronic hepatitis, since they always tend to stimulate the liver, by irritating the intestinal canal, and because they augment thus the secretion of bile. It is necessary to remark, that in chronic hepatitis and peritonitis, purgatives produce most always relief, on account of the revulsive irritation they determine on the intestinal canal and of the evacuation they procure. It is in these two diseases also, treated under the name of *obstructions*, that they have been most abused. M. Broussais has remarked, that this relief was never but momentary, because there exists between the intestinal canal and its appendages, a relation of action too intimate, for its irritation to produce a revulsion of the inflammation of the latter; by making habitual use of purgatives in these diseases, we add to the chronic hepatitis and peritonitis, a gastro-enteritis which must necessarily exasperate them, and which hastens the progress of disorganization.

In rheumatisms and gout, purgatives have the same inconveniences as emetics, and for the same reasons. They can only produce disagreeable effects in hemorrhages: indeed, it is evident that they would be pernicious in hæmatemesis, and that they would increase the hemorrhoidal flux, hematuria and menorrhagia, since they may even produce these diseases. We forbid them also in hæmoptysis, as in all other irritations of the organs of respiration. They would not be less injurious in the neuroses of digestion, since these are almost always the symptoms of chronic gastro-enteritis; and the use of purgatives nevertheless, is one of the dominant phantasies of hypochondriacs, who find too many physi-

cians disposed to satisfy them. Finally, purgatives would be pernicious in the different organic diseases, since they only exasperate the gastro-enteritis always supervening in these affections.

Struck with the important results produced by the analysis of the tissues, the illustrious author of the General Anatomy announced that the *materia medica* was to be entirely remodeled; that, to place it on a more solid basis, we must cease, as had hitherto been done, to seek out the mode of action of the different medicines in each malady, and study that which they exercise directly or sympathetically on the different organic tissues, by taking care to notice the modifications their effects experience from the sympathetic connexions uniting together all the organs. After having proceeded for some time in the study of the *materia medica*, according to these principles, we shall see the incertitude and diversity of opinions, existing on the properties of the greater number of medicines, disappear; because they have been studied in a manner purely empirical. The thesis of M. Gérard, which is a repetition of the opinions of M. Broussais, on the action of *digitalis*, gives us a model of the application of Bichat's physiological method, to the study of *materia medica*, and furnishes us the proof of the certainty and importance of its results.

Taken into the stomach in a large dose, *digitalis* is a violent poison, whose effects have been known for a long time, having been established by many physicians, and still later by M. Orfila. The symptoms this poisoning gives rise to, are head ache, tendency to sleep, which ends by becoming insurmountable, titubations, vertigo, optical illusions, dilatation of the pupils, nausea, vomiting, alvine dejections, hic-cough, acceleration of the pulse, inexpressible anguish, cold sweats, convulsions and death.

M. Gérard, wishing to establish the effects of *digitalis* on the circulation, made the following experiment on himself. After having for several days examined the state of his pulse, which gave habitually eighty-five beats a minute, he took half a grain of the aqueous extract of *digitalis*: in the evening there were only sixty pulsations, he felt drowsy and slept for a long time without interruption. The next day another dose produced very near the same effects. The third day he swallowed a grain: the pulse still counted sixty pulsations, the appetite was good, the urine not increased:



in the evening he experienced an ungovernable disposition to sleep. The third and fourth days he reached a grain and a half, and his pulse sank to forty pulsations. The sixth day after taking two grains of the extract, the appetite ceased; at the middle of the day, the pulse was accelerated, pain in the head, debility, and tendency to sleep; in the evening nausea and shivering, vomitings, redness of the tongue, burning heat of epigastrium, great thirst, notwithstanding he slept from nine o'clock until seven the next morning. After waking, had head ache, shiverings, titubations, mouth clammy, tongue foul, but pointed and red on edges, continual somnolence, dilatation of the pupils. In the day profound and stertorous sleep. M. Gérard made use of a great quantity of acidulated drink and enemata—and the persons who surrounded him kept him in a very fatiguing state of watching. On the eighth day, after having taken a little repose, he experienced an erection which remained seven or eight hours, and returned the next day; it was not accompanied by venereal desire, but by a general uneasiness, nausea, somnolence, and very severe head ache. The ninth day a bleeding of ten ounces, dissipated all the bad symptoms; and on the 22d he could leave off the rigid diet to which he had been restrained.

M. Gérard has established what Orfila has said of the alcoholic extract of digitalis. He injected into the jugular vein of a dog, ten grains of the watery extract dissolved in three drachms of water: three hours afterwards the pulse was thirty-eight in a minute, instead of eighty-six. Otherwise the animal did not appear to be affected, and making his escape, ran off.

He injected into the jugular vein of a middle sized dog, six grains of the alcoholic extract, diluted in two drachms of water: the pulse which beat before the operation, from 100 to 105 times in a minute, soon rose to 135 or 140 pulsations; the animal uttered several cries, seemed stupefied, experienced vertigo, turned several times around the chamber with his head down, and had evacuations both by urine and stool. Four minutes afterwards the pulsations were reduced to 60, and by degrees still lower; the pupils became dilated; the head was thrown back; the paws were alternately contracted and extended; the pulse became insensible, and death took place fourteen minutes after the injection.

He injected twelve grains of the alcoholic extract into

the jugular vein of an enormous dog, whose pulse was from 90 to 95 pulsations per minute ; directly he sank down, experienced some convulsive movements and seemed to sleep. The progressive diminution of the pulsations might be observed at leisure—they were reduced to fourteen, five minutes before death, which happened two hours and a half after the injection.

“Digitalis employed in small doses, and deposited in a healthy stomach,” says M. Gérard, “exercises a remarkable effect on the heart ; the beats gradually sink to twenty-five or twenty-eight per minute. The pulse also becomes more full and regular. The nervous system receives an influence equally sedative ; we observe particularly a tendency to sleep, the muscular debility increases little by little, and it is greater in the lower extremities, probably on account of the use of these parts, destined to support the weight of all the rest of the body.

“These effects which render digitalis wisely administered, a precious medicine, will never be obtained except by those acquainted with the different degrees of irritation the stomach is susceptible of ; for if this organ were irritated even sympathetically, we would see results very different from those we have pointed out. This explains why authors who have written on the properties of digitalis, have expressed such different opinions. I believe their cases to be true ; but the consequences they have drawn from them are evidently false ; they would have been more exact, and like those I have deduced from them, if they had known the irritations of the stomach, on which M. Broussais has fixed the attention in a particular manner.”

The property possessed by digitalis of rendering the circulation slower, has been long known. Murray, who has pointed this out, has remarked also, that when used for too long a time, it produces frequency of pulse. Sanders has likewise seen it become insensibly febrile. M. Gérard has had many occasions to observe that the pulse, reduced from one hundred and twenty to thirty-five, and even thirty a minute, resumes often its former frequency. Many physicians have rejected digitalis, saying that its effect is merely momentary ; not knowing how to appreciate the value of the symptoms by which the stomach announces its irritation, they did not suspend in time the employment of this substance, or they counteracted its effects by stimulants ; then the sympathies

uniting the stomach to the heart, transmitted to the latter the superexcitation of the former. We may obviate this inconvenience by recurring to the iatroleptic method of administering digitalis; we are surprised that M. Gérard has not made this remark. The effects of this substance then would be the same on the nervous system, and it would not act on the stomach. We have twice employed the tincture of digitalis in frictions on individuals affected with hypertrophia of the heart. We made use of it for a long time, without any sign of gastric irritation supervening; in one, the pulse was reduced habitually to forty or forty-five pulsations; in the other, to forty-five or fifty. These two individuals were cured; but the employment of the digitalis was seconded by regimen and sanguine evacuations.

M. Gérard remarks, that if we ought to stop the use of digitalis as soon as it produces a little heat at the epigastrium, inappetency, redness of the borders of the tongue; a fortiori should we proscribe it when the stomach is already irritated; for then it would only augment the symptoms, and physicians who have regarded digitalis as a stimulant have based their opinions on cases where they see an acute or chronic inflammation keep the stomach in a continual state of excitation. M. Gérard in proof of it, gives two cases borrowed from Sanders.

A young man aged eighteen years, convalescent from a hæmoptysis, still had a strong cough with pain under the sternum, insomnolence and febrile excitement. At the end of ten days these symptoms diminished, and were replaced by an abundant expectoration; the pulse beat ordinarily 96 strokes in a minute: he prescribed eleven drops of digitalis. After having continued it during six days, the pulse beat 128, and the symptoms were so much aggravated, that he doubted whether he should persist. But as the condition of the patient was desperate, and as, moreover, the assertions of authors and practitioners justified the employment, he was resolved to raise the dose to fifteen drops, twice a day, at the same time observing the patient with the greatest caution, in order to stop it if the symptoms were aggravated. Very soon there was a frightful exasperation of the symptoms, agitation, suffocation, lividity of the face, delirium, elevation of the pulse to 158 pulsations per minute. The patient showed a desire of taking no more digitalis, and his father being opposed to the administration of this medicine,

the three following days the disease was less intense ; the patient, however, expired after some convulsive movements.

A man aged 36, showed all the symptoms of phthisis, and his pulse was 75 per minute, when he was ordered to take fifteen drops of the tincture of digitalis three times a day : in a short time the cough increased, the chest became painful, the nights more agitated, the pulse more irregular and varying from one hundred to one hundred and twenty—in a word, all the symptoms increased ; there was also pain in the head so intense, that it was found necessary to recur to the antiphlogistic method, which dissipated it in a short time. On returning to digitalis, the inflammatory symptoms were reproduced with great violence, and its employment was no longer insisted on.

After having examined the effects of digitalis on the economy, M. Gérard points out in what diseases it may be successfully employed. The sedative influence it exercises on the heart renders it precious in disturbances of the circulation, independent of inflammation ; thus it is very useful in aneurisms of the heart, when the mass of blood has been diminished before hand ; this organ contracts then with less rapidity and in a more regular manner ; its nutrition becomes more active and, if the disease be not too much advanced, we arrest the progress, provided the action of the medicine be not counteracted by a stimulating regimen, violent exercise, &c. Of all the preparations of digitalis, the alcoholic extract, having the greatest sedative effect, seems to merit the preference ; its effects are very marked, from a quarter of a grain diluted in two ounces of water. We may increase it gradually to one grain ; we employ also the watery extract in doses from half a grain to a grain and a half. The powder is generally employed in doses of from two to ten grains ; but it is much less active and more promptly fatiguing to the stomach than the extract.

Digitalis, exercising a very marked sedative effect on the nervous system, and diminishing the muscular irritability very much, produces good effects in epilepsy, which is not produced by an alteration of the brain, or a permanent cause of irritation. M. Broussais has several times obtained permanent cures of this disease by means of digitalis. There is another affection in which almost all remedies have hitherto failed, and in which M. Gérard thinks, with M. Broussais,



that digitalis cannot fail to be useful : we allude to tetanus. The danger being pressing, we should administer, besides the resinous extract internally, the alcoholic tincture in frictions, in order to produce an action more promptly, without the danger of aggravating the symptoms by stimulating the stomach too strongly.

The property digitalis possesses of diminishing the frequency of the pulse, has caused it to be advised in fever.—What has already been said shows the absurdity of this practice, which never had happy results, and which could only be injurious, since the stomach (whose inflammation gives rise to the febrile symptoms) is stimulated.

M. Gérard refuses to digitalis the diuretic property so long ascribed to it. He founds his opinion on this, that 1st, in the cases where they attempt to prove the diuretic action, there existed a disease of the heart which produced dropsy, and which was calmed by the employment of digitalis ; 2d, from the avowal of M. Chrétien, it was often employed without the slightest success, and in most of the cases in which it produced any effect, it had been associated with white wine, tincture of squill, and the acetate or nitrate of potash ; 3d, M. Alibert has put it fruitlessly in use at the hospital Saint-Louis ; 4th, M. Broussais has always been obliged to order the infusion of juniper berries, frictions with the tincture of squill, &c. to dissipate the infiltrations of aneurismatics, to whom he had given digitalis ; 5th, finally, he himself has remarked, in more than eighty patients, who used this medicine, that the urine was not at all augmented ; and at the hospital *la Charité*, when he has seen it prescribed, it was associated, to insure success, with oxymel of squill, water of borage, and nitrate of potash.

If it be true that digitalis does not merit confidence in dropsy, we should abstain from its employment, because it may produce very serious consequences, and it is sufficient to be convinced of it, to recollect that a great number of dropsies are produced by chronic inflammations, and that in the cases where the stomach is not inflamed, it may become so by the action of digitalis ; for as we have often remarked, inflammations frequently spring up in the midst of debility.

From all that precedes it results then 1st, that digitalis exercises a sedative influence on the nervous system, and consequently diminishes the muscular action ; 2d, that it renders the circulation slower by virtue of this property :

3d, that it stimulates strongly the gastric mucous membrane; 4th, that the irritation experienced by the stomach after it has been for some time in contact with this substance, destroys the effects of the digitalis, by transmitting sympathetically its superexcitation to the heart.

#### ARTICLE IV.—OF CONVALESCENCE.

The name of convalescence is given to that state in which the patient remains, from the termination of the disease until his perfect re-establishment. Although this has been a subject of many investigations, at the head of which we place the dissertations of Hoffman and Adolphi, it has never been considered in its proper point of view. Indeed, the nature of a great number of diseases being unknown, they must also have often misunderstood the cause of accidents which happened to impede convalescence; the feebleness accompanying always this condition, alone fixed the attention, and the obscurity resting on chronic inflammations, did not permit them to understand the true obstacle to the re-establishment of strength. It was then necessary that the light of pathological physiology should be applied to convalescence as well as to disease; several pupils of the physiological doctrine have undertaken this in their theses, amongst whom we notice principally those of M. M. Quément and Rennes. The latter undertakes first to show the necessity imposed on the practitioner, of watching over with as much care, the phenomena of convalescence, as those of the disease. "If it is praiseworthy for the physician," says he, "to snatch the patient confided to his care from a threatening death, if it is his duty to lavish on him all the succours of the art, at the moment of danger, the task which remains for him to fulfil during convalescence, though less brilliant in appearance, is neither less important nor less difficult. Like a vessel saved from the tempest, after being rudely lashed by the waves, the convalescent is ill able to brave new dangers; he has need of a wise and skilful hand to direct him amidst the breakers surrounding his course; and it is not unjustly that the physician, abandoning his patient during convalescence, has been compared to an imprudent pilot who no longer takes care of the helm at the moment of entering the port."

When an inflammation has developed sympathetic lesions in the principal organs, the broken equilibrium is only re-

established little by little. There must then take place a succession of changes of different stages, which form, as it were, steps conducting from the morbid to the healthy state. M. Rennes presents a picture of the different periods of convalescence, and considers successively its commencement, progress and termination.

When the disease has completely terminated, convalescence commences. There is some difficulty, it is true, in establishing a distinct line of demarcation between these two states; but it is not impossible, as physicians say who are strangers to physiology, to fix in a precise manner the moment when the patient enters into convalescence. For the purpose of resolving this question, too much confidence has been put in critical phenomena; if, in general, they produce a cessation of the inflammation in which they appear, we must acknowledge also, that they often only diminish its intensity. If we regard them as the signal of convalescence, it will happen in many cases, that we shall consider as terminated, diseases only palliated; this is the cause of many chronic inflammations. The danger then of the false security inspired by the appearance of critical phenomena, when they are not followed immediately by the complete termination of the disease, imposes on the physician the obligation of recurring to more certain signs for establishing the commencement of convalescence. The signs will be constantly furnished by the attentive observation of the changes which take place in the functions; and we will be informed of the termination of the disease by the complete disappearance of morbid phenomena, cessation of pains, uneasiness and anxiety; a general feeling of well being, the return of sleep, natural state of the sensations, facility of perception, calm of the physiognomy, and the manifest expression of contentment. In the mean time the pulse has lost its frequency; it has returned to its normal state, or it presents only softness and compressibility—a necessary consequence of the feebleness in which the patient is left; the skin from being dry and harsh, has resumed its suppleness, and has again become the seat of a humid warmth; the other exhalations and secretions are re-established; the excreted fluids have returned to their primitive quality; the respiration is free, regular and easy; the tongue clean and the taste returns with appetite.

The most remarkable circumstances of convalescence are;

on the one hand, as M. Quémont judiciously observes, a state of peculiar susceptibility of the organs which have been the seat of any affection, and, on the other, a state of debility, of languor and prostration into which this affection has thrown all the other parts of the body, according to its intensity and duration. It is very important not to confound these two different conditions in the treatment of convalescence, in which we should always propose two results, viz. to restore to the first the degree of sensibility proper and necessary to them for executing their functions regularly, and to the latter the force, the liberty of action and equilibrium they had lost. The greater number of physicians forget, on the contrary, the organs which has been diseased; many even have not known them and have only treated symptoms; and during convalescence they fix all their attention on the emaciation, the paleness of the face, the feebleness and languor more or less marked of most of the functions. These phenomena are observed generally after acute diseases, and constantly after chronic inflammations; they are more or less marked, according as the disease occasions a greater or less expenditure of sensibility. The disturbance itself experienced by the organs, is sufficient reason for the diminution of the forces; but we should also observe, that the debility is never general: the organs recently inflamed preserve still, as we have already said, an increase of excitability, and all the parts of the economy do not participate in the debility. M. Rennes and M. Quémont examine the state of the functions of the different apparatus in order to appreciate to what point each of them is affected by it.

When convalescence really takes place, and inflammation no longer exists in the viscera, the weakness which characterizes the first periods of this state depends immediately on the want of energy of innervation, and less activity of the circulation. The blood more abundant in serum, less rich in fibrine, stimulates the organs feebly; hence the feebleness of the pulse, the frequency of syncope, the paleness of the skin, coldness of the extremities, the desire with which individuals seek the impression of heat; hence also the general weakness of the agents of locomotion; the muscles being feebly stimulated and receiving less nutritive matter; weakened also by inaction, become emaciated and soft, are incapable of sustaining long continued action; the



walk also is painful and staggering, the speech slow, &c. In general we may establish, that debility is observable in the cerebral functions, and in all those over which the nervous system of relation presides; the sight is weak and confused, the ear loses its delicateness, the perception of odours, of tastes, and that of tangible qualities of bodies, is obtuse. It is necessary to distinguish here, these disturbances in the action of the organs of sense, from the diminution of their sensibility; indeed whilst the former exist, the latter is more exquisite, and convalescents are more impressionable, although their sensations be less perfect; thus their sight is less accurate, yet they cannot support the brilliancy of a vivid light; they distinguish sounds badly, and the slightest noise distresses them; they cannot discern odours, yet perfumes notwithstanding give them head aches and even produce syncope; they are deceived about the tangible qualities of bodies, yet they cannot support the contact of any thing cold. This general nervous susceptibility is manifested very often in the genital organs. Adolphi reports that old men, impotent before the disease, have recovered during convalescence a faculty which they had for a long time lost.

The intellectual faculties partake of this debility of action of the organs of sense; the convalescent is incapable of prolonged attention; the memory is impaired; the ideas are associated with difficulty, and the judgments are often erroneous.

If we now consider the state of the functions of nutrition, we will see that the most of them far from being enfeebled, are more active than before the disease. The first phenomenon which announces ordinarily convalescence, is the return of the appetite; and we can easily conceive, if we reflect that in almost all inflammations the stomach is affected, that the appetite must be the first sign of its return to the normal state; this feeling is often very strong, and more so in proportion as the disease has been more acute, and as it has exacted a long abstinence. But the digestive forces are not re-established as soon as the desire of aliments.—The digestive mucous membrane which has been inflamed, preserves for a long time great susceptibility; digestion is tedious and painful, and aliments can only be supported at first in very small quantities. Physicians of every age have known the danger of satisfying too soon the keen appetites of convalescents. We know that when we yield to their

desires, the want at first very imperious, is gradually lost, and that the emaciation instead of disappearing, remains stationary, or still increases—phenomena announcing the existence of chronic gastro-enteritis. Hippocrates has pointed out these truths in the following aphorism : *A morbo belle comedenti nihil proficere corpus, malum.*

But when we know how to direct the action of the stomach, digestion is easy and complete ; absorption is exercised on the surface of the intestinal canal with an activity proportioned to the necessities of nutrition, and the economy rapidly repairs the losses sustained during the disease ; for whilst the absorption is more active, the exhalations are less abundant than in the healthy state ; the subject takes little exercise, the sleep is more prolonged, in a word the losses are less considerable.

When convalescence is free from morbid symptoms, its march is regular and leads promptly to the re-establishment of health. But many circumstances may shackle or interrupt its course, and keep it stationary or make it retrograde towards sickness. M. Rennes investigates the causes productive of these unhappy effects ; he refers them to two circumstances : either convalescence meets obstacles that oppose its progress, or it did not in reality exist—it was only apparent.

Convalescence being real, two causes may form obstacles to the return of health, 1st, persistence of the state of debility, which characterizes the first periods of convalescence, or defect of nutrition ; 2d, the return of morbid phenomena, or relapse. Besides the weakness the disease itself has produced, convalescents find themselves submitted to a concurrence of debilitating influences, such as a residence in low and humid places, in the neighborhood of marshes, a cold and humid temperature, indigence, the privation of aliments of good quality, coition, masturbation, &c. ; hemorrhages which supervene sometimes during convalescence ; abundant suppurations, furnished by ulceration of the sacrum happening during the disease, or by a critical abscess. At other times inherent influences of the constitution itself of the subject, oppose the good effects of regimen : such are advanced age, a lymphatic constitution, a constitution broken down by misery or debauch.

Under the influence of these causes, convalescence remains stationary, or the emaciation and debility continually

increase ; all muscular action for any time sustained, is impossible ; the pulse is feeble and slow, the heart is often subject to palpitations ; the extremities are cold, the skin and the origin of the mucous membranes are colourless ; the cellular tissue of the legs becomes infiltrated ; the tongue is pale, humid and broad ; the appetite languishes, digestion is slow and accompanied by eructations and borborygmus ; the abdomen is often distended by gas, but it is supple and without pain ; the fecal discharges are liquid ; the urine is pale ; the sleep light, and the skin is often covered with sweat, although its warmth be very moderate. This asthenia conducts the patient to marasmus and often to scurvy and dropsy ; but before these results take place, there is ordinarily developed some local irritation and in the digestive passages oftener than any other organ. Then the symptoms of gastritis reappear ; this soon provokes sympathies, and *hectic fever* is declared. If we observe strictly, we shall discover that it is very rare, in these cases, as in all others, that the asthenia, which at first may be general, persists for a long time in all the organs, and that soon to these phenomena is joined those of a local irritation ; then the condition of the convalescent has become much more serious ; to the danger of exhaustion of the forces is joined that of an inflammation which this circumstance renders still more serious. We know that in debilitated constitutions concentrations take place with the greatest facility ; the equilibrium cannot be re-established, the proper means for combatting inflammation cannot be employed except with the greatest circumspection, and the patient succumbs more under the consequences of irritation, than of debility.

It is very common to see the morbid phenomena reproduced during convalescence ; the feebleness and great susceptibility into which the subject then falls, renders him more sensible to the impression of stimulants ; and this is especially felt by the organs lately inflamed, and which have preserved an overcharge of excitability. Relapses may take place at all periods of convalescence, and the causes producing them, are all those capable of stimulating directly or sympathetically the organs which have been disordered ; and the most frequent amongst them are the impression of humid cold, atmospheric vicissitudes, intemperance, forced exercises of the body and mind, powerful moral impressions, premature enjoyments of love, and the erroneous practice

of some physicians, who do not think it proper to dispense with the administration of purgatives during convalescence or who rashly administer tonics, for the purpose of forcing the convalescent from the debility in which he languishes. Relapses are also more frequent in those seasons of the year subject to most frequent changes in the temperature of the atmosphere, and amongst individuals deprived by indigence or social position, of the necessary hygienic means during convalescence.

In general, we understand by relapse, the return of the disease which has lately existed ; but sometimes another organ becomes affected ; thus during convalescence from a pleurisy, the individual will be more exposed to this affection than to any other, because the pleura possesses then more aptitude to inflammation than any other part ; but the immoderate use of aliments will sooner produce a gastritis, than it will recall the pleurisy. However this may be, relapses are very serious ; they are much more so than the original disease, on account of the debility of the individual, the difficulty of treatment, and the greater aptitude of the diseased organ to sub-inflammations and disorganizations.—A remarkable observation and one not overlooked by M. Rennes, is that the return of the morbid state during convalescence, is not manifested always by the marked symptoms that we designate under the name of *relapse*. The feebleness, the torpidity of the sympathies, favor in these subjects the chronic forms of inflammation ; their existence then is often unknown, debility alone fixes the attention, and the physician full of confidence in the tonics and aliments which he prescribes to raise the forces, seeks every where else the cause of the tedious convalescence.

Sometimes the physician suffers himself to be imposed upon by the almost complete disappearance of symptoms of an inflammation, and believes in a convalescence only apparent ; the irritation has lost its intensity, but has not disappeared, it continues in a weaker grade ; the sympathetic phenomena no longer exist, the local symptoms are scarcely apparent and the patient no longer suffers : convalescence it is thought is established, and if some passing disturbances are observed in the functions they are taken for nervous phenomena and are regarded as the results of debility.—M. Rennes investigates the circumstances by which the physician may thus be led into error ; and would establish



as a general principle that these unfortunate mistakes depend most frequently on his ignorance, and that they are most frequently the results of ontology. He indeed, who only sees symptoms in diseases, thinks them terminated when the latter have disappeared; and how often do chronic irritations only produce a slight disturbance in the functions of the organ they affect! and then if the attention is not fixed on the latter, the lesion is misunderstood. M. Rennes justly observes that the passing of inflammations to the chronic state escapes us with extreme facility, when their seat has not been sufficiently recognized during the acute stage, or when the attention is not directed on the organ particularly affected.

As long as latent chronic irritations continue, restoration of the patient is not possible, he neither recovers his strength nor embonpoint; the appetite languishes, and disgust succeeds it; the patient is pressed to take aliments, they are varied; the stomach is stimulated by bitters and the practitioner is astonished at the length of the convalescence: far from discovering the true source, he attributes it to debility. Under this impression he has recourse to all that is calculated to keep up and exasperate the points of irritation remaining in the viscera; it is then very important to be able to recognize the obstacle to the re-establishment of health, which depends truly on the debility brought on by the existence of a chronic inflammation.

“When the convalescent,” says M. Rennes, “is properly nourished, well clad, and placed under circumstances the most favorable in appearance to the re-establishment of health, we are authorized to consider the convalescence as doubtful, which makes no progress; and we are naturally led to suspect then, existence in the economy of some latent point of inflammation, which destroys the strength by degrees, and is opposed in spite of the alimentation to the return of health.

This suspicion acquires new force, if on examining with care the anterior circumstances, we discover that the antecedent disease is only imperfectly destroyed, that the crises have been incomplete or the treatment insufficient. These notions, like the errors of regimen committed by the convalescent, or the injudicious administration of excitants; these notions, I say, only furnish presumptions. What should particularly fix the attention of the physicians, is the atten-

tive examination of the condition of the organs and functions. Thus we will first interrogate the state of the pulse ; if we find it active and frequent, this circumstance alone should put us on the track of the cause opposed to the re-establishment of health ; it indicates with almost certainty the existence of chronic inflammation. If these two characters of the pulse be present, particularly after eating, and if at the same time heat of skin, head ache, uneasiness, in short febrile excitement, be developed, it is because the labor of digestion is painful to the economy, and particularly to the organs charged with its execution.

“ We turn our attention then from this point ; and when we find that the tongue is dry and red on its edges and point, foul in its middle, with thirst, and disgust for food ; that the bread seems bad and the wine bitter ; that the appetite is not awakened by any kind of food ; that the use of tonics only increases the uneasiness, developes a sense of heat at the epigastrium, and flushes of heat mounting to the face ; it is only a state of inflammation of the stomach which can explain such symptoms. At other times the aliments clear this organ with sufficient ease ; but the intestines support their presence with pain ; the augmented sensibility of the mucous membrane covering them is manifested by slight colics, diarrhœas or tenesmus, &c. The absorption of chyle is performed with difficulty on irritated surfaces and the aliments are discharged half digested ; and the body is not profited, notwithstanding there is a good appetite. If we feel the abdomen with care, we find it ordinarily distended, elastic without suppleness, and it is very rarely that we do not discover in some point an obtuse pain augmented by pressure, which becomes more acute at intervals. In other cases, we feel distinctly hardnesses, and engorged lumps in the viscera. Besides, the skin is dry and rough, cutaneous transpiration takes place with difficulty ; the other excretions are more or less altered, and furnish notions more or less exact of the seat of the disease.

“ If it results from an examination of the digestive system and its appendages, that they present no alteration, it is necessary to direct the attention to the chest ; if there be a dead sound in any point, no matter how trifling, wandering pains in the chest, dyspnœa at intervals, a slight redness of the cheeks, and a slight febrile movement returning every day after eating, in the evening or during the night, this is

sufficient to reveal a latent inflammation of the lungs.— A latent pleurisy produces very near the same phenomena; it is more common than pneumonia under this form, whereas the diseases of the pleura, acting less directly on the sources of life, ought to be more easily hidden, at least in the commencement, from the eyes of the observer.

“I confine myself to the annunciation of these phenomena, all of which relate to the irritations of the digestive system or pulmonary apparatus: these are in fact the most common. There is hardly any thing else than inflammations of the organs essentially assimilatory, which (existing in so feeble a degree as only to be manifested by vague and obscure symptoms,) can effectually oppose the return of strength and embonpoint, and sometimes end in the annihilation of life, by destroying secretly its principal means.”

After these considerations, M. Rennes treats of the attentions which convalescents require; their object should be, to second the efforts of nature which tend to the reparation of the losses the economy has experienced, and to abstract all the influences retarding the progress of convalescence, or occasioning relapses. The employment of hygienic means wisely directed, is sufficient ordinarily to produce this double result; it is only in difficult convalescence or where it is imperfect, that we are sometimes obliged to recur to medicines.

Atmospheric intemperatures retard very much the progress of convalescence, whereas it is generally rapid during spring and summer. It is necessary then to protect the convalescent carefully from cold and humidity, by placing him as much as possible in a dry and warm situation, and by making him wear appropriate clothing. It is often necessary to advise convalescents a change of climate: thus, we often see physicians send the inhabitants of cold, damp countries, (who recover with difficulty after an inflammation of the organs of respiration,) into southern countries, where the action of the skin being greater, the excitability of the pulmonary mucous membrane becomes diminished. These journeys are often advantageous by the diversion of mind they procure to patients; and this is the principal, and perhaps the only utility derived from watering places. It is very important, after an epidemic, to remove convalescents from the places of infection; if circumstances would permit, it would be well also to make them leave the wards

of the hospital, where they breathe an impure air, take little exercise, and are often overcome by *ennui*.

Diet constitutes the most important part of the hygiène of convalescents, as is proved by what we have just said on the cause of the accidents they experience. Nourishment should be allowed at first in very small quantities; the quantity and nutritive quality should be augmented progressively, according to the effects they produce; we should choose those articles which are easy of digestion, which furnish the most nutritive material in the smallest bulk, and which are the least capable of stimulating the digestive passages; they should be prepared in the most simple manner possible: thus we should choose milk, eggs, broth, rice gruel, farinaceous vegetables, cooked fruits, white bread well fermented; after a time, the white meats boiled or roasted; it is better to eat little at a time and often, than to overload the stomach; old wine much diluted should be the drink.

Active or passive exercise is one of the most useful means that can be employed during convalescence, to establish the equilibrium, to prevent the concentration of forces on the viscera, and to diminish the general susceptibility, by augmenting the action of the muscular system. Exercise is very powerful in long convalescences, particularly in those of chronic inflammations. We should, with the same view, caution the convalescent against every thing calculated to excite the susceptibility and increase it, as mental labor, coition, &c. Sydenham said that the physician was often more useful in preventing the abuse of medicines than in administering them: it is principally during convalescence that he should fill this part; but we too often see tonics lavished to excite the appetite and restore the forces. "It is not the loss of blood," says M. Broussais, "which prolongs convalescence; it is the points of irritation remaining in the viscera, and the tonics and stimulants often administered to convalescents who have lost a great deal of blood." This professor frequently remarks that the most tedious convalescences are those following diseases which have had the longest duration, and that consequently the best means of abridging them is to treat the phlegmasiæ with activity: indeed we may often observe that the recovery of patients is only difficult because the physician has been too timid at the close of the treatment, and because he has too soon stopped the use of antiphlogistics, after having calmed the first symp-



tonics. No doubt when we discover that feebleness and languor of sanguification, are the sole causes opposing the re-establishment of health, we should recur to the administration of tonics ; such as good wine, bitters and bark ; but it is of the greatest importance to be assured that the debility is not the result of a point of chronic inflammation and particularly in the digestive passages. The physiological physician will never commit an error in this respect. Tonics will always be employed without danger by him who knows gastro-enteritis well ; he will take care to stop as soon as the heat of skin, thirst, and redness of the edges of the tongue shall announce to him that the excitation of the stomach becomes morbid ; he will not forget that the most profound debility may be united to a chronic irritation of the digestive mucous membrane, and that under these circumstances tonics will only maintain and exasperate this irritation and produce fatal disorganizations.

We find in the thesis of M. Déchenaux a fact justifying what we have said on the circumspection to be used in the administration of stimulants in individuals whose debility calls loudly for their employment. "I have seen," says this physician, "a young woman only a few days out of bed, in the most complete adynamia, from suckling two infants at once, and not taking nourishment in proportion to the losses she sustained. But her tongue was pale and humid, and there was no febrile movement. In order to restore her strength, they commenced by giving her tonics to an extent too considerable for her condition ; soon the tongue became dry, red, covered with a brownish coat, then black, as well as the lips and teeth ; fever came on ; the pulse was small and very frequent ; the heat pungent, particularly on the abdomen ; tympanitis and very fetid involuntary dejections supervened. The decoction of bark, (then her ordinary drink,) was suppressed, also camphor and other stimulants, which were replaced by simple lemonade and broth ; emollient fomentations on the abdomen and emollient injections were employed ; in a short time a sensible improvement was remarked, and the patient was not long in becoming convalescent."

The inflammations sometimes developed during convalescence demand the employment of antiphlogistics ; they should then be employed with a great deal of circumspection ; we should confine ourselves as much as possible to re-

vulsives, and if we are forced to recur to local bleedings, they should be small ; it would be dangerous to increase to the debility, and we should always recollect that it favors congestions in the viscera and particularly in those which have been inflamed.

The vulgar are persuaded that the cure of a disease cannot be completed without the administration of several purgatives ; and we find too many physicians who, governed by humoralism, or directed by blind routine, are disposed to second these desires ; this practice is the cause of many relapses and chronic gastro-enterites. Purgatives heretofore so much misused, and suitable to so few cases, should in general be banished from the treatment of convalescence ; they can only stimulate the digestive passages and add to the debility. Perhaps they are sometimes proper to overcome obstinate constipation : but as this depends most frequently on an irritation of the small intestines, it is most wise to be contented with demulcent means and if we recur to laxatives, they should only be thrown into the large intestine. Practitioners also generally abuse opiates, which appear to be solicited by the sleeplessness often tormenting convalescents. M. Rennes correctly observes, that they radiate the vital action, and that if inflammation be developed, they have the great inconvenience of masking the symptoms and allowing it to progress without the patient or physicians perceiving it. We should farther remark, that insomnolence depends ordinarily here on an irritation whose sympathies constantly stimulate the brain, or on the inaction in which the convalescent remains, and that then the best means of remedying this is, to put a stop to the first, and to make the patient take exercise every day, either active or passive, according to the state of his strength.

# OF GASTRO-ENTERITIS.

## CHAPTER I.

### CONNEXIONS OF THE DIGESTIVE MUCOUS MEMBRANE WITH THE OTHER ORGANS OF THE ECONOMY.

On account of the great importance of the part played by the stomach in health and disease, the stomach is without doubt, the organ whose lesions it was most important to study, and it is one of those which has least fixed the attention of pathologists. They have noted the symptoms of its different affections, without seeking their cause, and they did not even suspect that the numerous symptoms the different degrees of its irritation develope, had their source in the stomach, because the latter excited sympathetic disorders, more evident than the local symptoms; physicians have been led into error and have attributed to other organs the sympathetic phenomena, and more often still, have considered them as general disorders having no particular seat—in a word, not depending on any local lesion. A considerable number of morbid phenomena, however, were referred to the stomach; but the greater number of physiologists did not inquire, in what the lesion of this viscus consisted, and those who wished to do it, only developed, on the nature of their affections, erroneous theories, which almost always conducted them to improper treatment. At length, Brownism, which plunged in oblivion the small number of correct principles established before its origin, arranged under *asthenia* all the diseases of the stomach, and M. Pinel himself consecrated this fatal doctrine almost without restriction. He only comprehended amongst the inflammations one of the grades of gastritis, and he referred to *asthenia* the neuroses of the stomach, *hematemesis* accompanied by internal weakness, and the gastric symptoms seen during the course of another affection. After the example of Hoffmann, Sauvage, Boerhaave, Stoll, Cullen, and many authors who have preceded or followed them, M. Pinel has only described the highest grade of gastritis—that accompanied by pains, tension, heat of epigastri-

um, and obstinate vomiting; and like them, he has taken for the type of his description, those developed by corrosive poisons. However Hoffmann, and after him Cullen, spoke of a less elevated degree of this inflammation, coming on with less intense symptoms and rarely terminating by death; but this distinction, understood only by these authors, was neglected by all their successors.

It remained for M. Broussais to dissipate the obscurity reigning over the most important part of pathology, or rather to discover truths, never even thought of before by his predecessors, whatever those may say who attempt to diminish the glory of his labors. The author of the *Phlegmasies chroniques*, first discovered that a number of diseases whose nature was entirely unknown and which were described under the names of organic lesions, obstructions, and hectic fever, were only the results of chronic inflammations; from that time a new field was opened to observation, another route was traced out, and better scrutinized facts accumulated from all parts; a crowd of truths sprung forth, and shed over pathological physiology the lustre with which it shines at the present day. M. Broussais applied to the study of acute diseases the physiological method which had furnished such beautiful results in that of chronic affections, and soon unveiled the important part played in diseases by the digestive mucous membrane. He proclaimed then, that the essential, (idiopathic,) fevers of authors were only the varied forms of the sympathetic phenomena of gastro-enteritis; that this inflammation held under its dependance the eruptive inflammations and constituted the danger of them; that hepatitis was almost always produced by the extension of irritation from the duodenum to the liver; that all the pretended neuroses of the stomach were the result of gastro-enteritis; that scirrhus of this viscus was also a consequence of the same; that delirium, convulsions, &c. were often only the sympathetic phenomena of acute gastro-enteritis; that mania, apoplexy, and the other encephalic irritations, had in most cases, their origin in chronic irritations of the digestive passages; that gout depends most commonly on chronic gastro-enteritis which excites and keeps up the articular irritation; that in all febrile inflammations, the stomach and small intestine are irritated, if not during the whole course of the disease, at least during the first period of its existence; that it is also often the case even in apyretic inflammations;



that in debilitated subjects the digestive passages are frequently the seat of a chronic inflammation which adds to the weakness and leads to fatal disorganizations ; that a great number of medicines whose actions are directed against other organs fail in their effect, or produce additional symptoms, because they irritate the stomach or because this viscus is already inflamed.

This perfect knowledge of gastro-enteritis was sufficient to change the face of medicine ; but joined to the no less profound study made by M. Broussais of the diseases of other organs, it has brought about the complete revolution this science has undergone, and of which the professor of the Val-de-Grace is truly the author. We cannot then attach too much care to the study of the different grades of irritation in the digestive passages and to the most exact knowledge of the signs indicating this affection, of the causes which develop it, and of its local and sympathetic phenomena. It is in vain that they reproach the founder of these new principles with having exaggerated their importance ; this imputation can only spring from ignorance or dishonesty ; for all those who have given themselves up to the study of the physiological doctrine have been struck with the importance and extent of its results : the science of diseases has appeared to them then under a new light, and all have perceived that the author of the *Examen* did not go too far in saying that a knowledge of gastro-enteritis was the key of pathology. Nothing doubtless is more calculated to show the exactitude of this great truth than the examination of the sympathetic connexions uniting the stomach to the other organs of the economy ; this preliminary study will, besides have the advantage of making us better understand the action of the sympathetic causes of gastro-enteritis and the development of its general phenomena. We should then commence the history of this disease by the relation of the facts we find assembled in several inaugural dissertations on this subject, which has been correctly treated by M. Foucault, and still better in the thesis of M. Moncamp, already mentioned.

The stomach may be considered as an active centre from whence is radiated a crowd of sympathies again reflected over the whole economy, and like a focus to which tend all the impressions of other organs. If any one wishes to form an idea at once of the influence this viscus exercises on

the organism, he has only for a moment to fix his attention on the phenomena accompanying hunger ; when the necessity of taking food makes us feel for some time in the region of the stomach the indescrivable sensation which has received this name, we experience a sensation of general weakness, sinking and uneasiness accompanied in a short time by syncope, if it be not satisfied. The movements become more slow and less precise, the face is pallid and the eyes languishing ; the skin is covered with a cold sweat on the least motion ; the exercise of the intellectual faculties becomes weakened ; vertigo and buzzing in the ears are perceived ; the heart is agitated by irregular palpitations ; the pulse is slower and less developed ; the respiration becomes slower ; the heat diminishes, &c. But hardly has a small quantity of food, a spoonful of wine touched the mucous membrane of the stomach, when all these phenomena disappear rapidly, agreeable feelings succeed to uneasiness and the actions of all the organs resume their energy and regularity. To this fact, generally known, we should add another not less remarkable, which proves still more evidently the great influence the stomach exercises over the whole economy. Every one has remarked that individuals affected with gastro-enteritis support the longest abstinence without ever feeling the necessity of taking nourishment, whilst if they be deprived of it during a state of health they succumb at the end of a few days. The patient it is said, is nourished at the expense of the fat deposited in the cellular tissue ; but why is not this aliment sufficient for the man with a sound stomach ? It is because life is only kept up by stimulants according to the great principle of Brown, because the stimulation exercised by food on the stomach is extended to all the organs, receiving from this viscus principally the excitation which calls their irritability into play. Their action then can be no longer exercised, as M. Broussais has first remarked, because it is no longer solicited when this source of general stimulation is abstracted. But if life cannot be maintained except by aliments and the exercise of digestion in the healthy state, the super-excitation of the digestive mucous membrane in gastro-enteritis is sufficient, with the aid of the sympathies, to stimulate the other organs, not only to the degree necessary for the execution of their functions, but also to produce a greater or less disturbance in their exercise ; it is thus that life can be kept up

during thirty five or forty days in febrile inflammations notwithstanding the most complete abstinence. It is to be remarked that it is no longer the case in chronic gastro-enteritis, during which the patients always feel more or less the necessity of taking nourishment, because the irritation of the stomach is not sufficiently acute to develop sympathies. We know also that the forces and feeling of comfort (*bien-être,*) reappear, that the heat augments, that all the phenomena accompanying hunger prolonged for a length of time, disappear as soon as food has been introduced into the stomach, and consequently long before their digestion, absorption, and assimilation have been completed; does not the instance of the savages of New Caledonia, who, according to the authority of La Perouse, silence the appetite by swallowing balls of clay, also confirm what we have here said? This substance contains no nourishment, but the stimulation it exercises on the mucous membrane of the stomach is sufficient to solicit the action of all the organs, by extending itself to them. We know also that death produced by abstinence, takes place sooner in some individuals than others; and if we examine the details we possess on this kind of death, we shall see that in those who have sunk most rapidly, the debility has successively increased, that the heat has been extinguished by degrees and that they have remained continually in a state of calm and insensibility. We see on the contrary that those who have survived the longest time have offered general symptoms of excitement, thirst, delirium and fever—phenomena of a gastro-enteritis developed by abstinence; for the appetite not satisfied, is transformed into pain, and the irritation of the nervous capillaries of the gastric mucous membrane, may be extended to the sanguine capillaries, and give rise to an inflammation sufficiently intense to provoke sympathetic phenomena. In the first, inflammation of the stomach has not supervened, or if established, has not awakened the sympathies which, in the second case, have been called into play with so much activity.

A number of facts drawn from physiology and pathology, show the strict relations existing between the gastro-intestinal mucous membrane, and each of the other particular organs. For the purpose of exposing them in order, we will examine successively with M. Moncamp and Foucault, the

relation of the intestinal canal with the different systems and organic apparatuses.

*Sympathies with the sensitive apparatus.*

1. *Brain and nervous system.*—It seems that in a state of health, the functions of the brain can only be alternate : we are at no time better fitted for mental labor than in the morning, as much on account of the repose of the brain, as of the vacuity of the stomach, which favors its action ; moreover most men addicted to mental labors are remarkable for their sobriety. Sleep and watching are manifestly subordinate to the state of the stomach ; the dreams are painful and fatiguing when it is overloaded with food ; the nightmare is very often attributable to difficult digestion ; in acute gastro-enteritis patients are tormented by insomnolence ; and in semiology a tranquil sleep which sometimes takes place in these affections, is regarded as a happy sign.

A proper excitement in the stomach spreads a pleasant sensation throughout the whole economy ; hence the disposition to joy during a prolonged repast : on the contrary a state of debility or irritation of this viscus, produces a feeling of general uneasiness and profound sadness. The presence of certain substances introduced into the stomach, proves still the strict sympathy of this organ with the brain. In an experiment of Bellini, related by Boerhaave, we see that a grain of the yolk of a spoiled egg, produced at the moment when it was swallowed, disturbed vision, vertigo, great confusion of ideas and inexpressible anguish. We ask with M. Foucault, if we can explain in any other manner than by sympathy, the promptitude with which certain narcotic substances, (which we cannot suppose to be already carried into the torrent of the circulation,) exercise their action on the brain ?

A fit of indigestion sometimes gives rise to very intense nervous symptoms. Every one knows that the varieties of gastritis and gastro-enteritis (known under the name of *sour stomach*, (*embarras gastrique*,) and of *bilious fever*, have as constant symptoms, superorbital pains. Hemicrania is accompanied by nausea, followed by vomiting which soon puts an end to it. How many habitual head aches, encephalites and even apoplexies are occasioned by gastritis.—Lethargy, coma, &c. ordinarily take their origin in the abdomen, says Professor Pinel ; the physiological doctrines have



put these assertions beyond doubt. If the most serious affections of the brain, and of the nervous system are often the product of a cause seated in the stomach, this viscus also is often influenced by lesions of the brain. We will explain when we speak of the etiology of gastro-enteritis, the part played in the production of this inflammation, by long watching, vivid moral affections, wounds of the head, meningitis, and encephalitis.

2. *Organs of sense.*—The affections of the stomach are expressed in the physiognomy and principally in the eyes.—In acute gastro-enteritis they are dry and red; in chronic gastritis, they are downcast, languishing and surrounded by a livid circle, the patients often experience vertigo, and heaviness in the movements of the eyes and lids; who does not know the expression they present in the different degrees of intoxication? The presence of worms in the intestinal canal, causes dilatation of the pupils, and sometimes according to Richerand, palpebral convulsions. Ophthalmia and styes are very often sympathetic of *gastric derangement*, (*embarras gastrique*.) We know that increased action of the intestinal mucous membrane from the administration of laxatives produces the best effects in chronic ophthalmia. Amauroses have often been cured by the employment of emetics. Who has not seen vomiting come on during the operation for cataract? In fine we know that we eat with disgust any thing repugnant to the sight, and that nausea and vomiting are often the consequence?

The organs of hearing are connected to the stomach by sympathies, which several facts demonstrate: vomiting is often announced by *tinnitus aurium*; and we have seen deafness produced by gastritis. We see in an aphorism of Hippocrates a proof of the sympathy existing between the stomach and organs of hearing: "*Quibus biliosæ sunt egestiones, surditate superveniente, cessant; et quibus surditas est, biliosis supervenientibus, cessat.*" Baglivi repeats the same thing in different words. Riga speaks of a General to whom the slightest irritation of the membrana tympana caused violent vomiting; we have seen the introduction of a foreign body into the ear, produce the same effect.—We read in the *Ephémérides des curieux de la nature* that there are persons affected in the same manner by music; Murray mentions several infants, who, poisoned by the aquatic cicuta, experienced hemorrhage from the ears.

The nose is often covered with pimples during chronic gastritis. The presence of worms in the digestive canal occasions a troublesome puritus in the nostrils; in acute gastritis we often observe coryza. The odour of food which is pleasant, gives birth to appetite, and disagreeable odours act sympathetically on the stomach, producing vomiting.—Baglivi says he has seen persons purged by the irritation which the powder or smoke of tobacco produces on the pituitary membrane.

We will not mention here the organs of taste, because we shall speak of the buccal mucous membrane when we treat of the connexions of the different parts of the digestive mucous membrane with each other: we arrive at the organ whose sympathies with the intestinal canal present the greatest interest.

Physiology and pathology demonstrate to us the strict connexions existing between the digestive mucous membrane and the skin. When aliments are introduced into the stomach, we feel on the skin a sense of cold and spasm: it is dry and hot during the first hours of digestion, and when this process is completed, it becomes coloured, softer to the touch, and in a short time moist. The same thing is seen in gastro-enteritis: during the whole course of the disease the skin is dry and more or less warm; it becomes moist when the inflammation is on the decline, and sweat more or less abundant follows. A glass of cold water introduced into the stomach speedily, arrests cutaneous perspiration, and a warm drink produces it long before the fluid has been absorbed, carried into the circulation and presented to the exhalents of the skin; and reciprocally the action of a warm bath on this surface suddenly disturbs digestion, arrests spasmodic vomitings, &c. Cold and heat have on the skin and consequently on the gastro-intestinal mucous membrane, an influence which it is important to study.

Heat, by exciting the skin, stimulates sympathetically the digestive mucous membrane, and the first effect of this irritation is, diminution of appetite and difficulty of digestion. If this action be carried farther, the irritation soon becomes morbid; hence the frequency of inflammation of gastric and intestinal mucous membranes during warm weather, and in warm countries. Is it not a fact, that all the grades of gastro-enteritis are, in frequency and intensity, in direct ratio

to the thermometrical and barometrical elevation, a state of the atmosphere which excites all the organs, but especially the skin? Is it not generally under the same circumstances we observe epidemics of bilious fevers, dysenteries, &c.? Yellow fever, in which no one can now doubt the existence of gastro-enteritis, commits its ravages in tropical climates, and do we not see the number of its victims progressively decrease, as the atmospheric heat diminishes?

Cold exercises on the digestive passages a sympathetic action no less remarkable. Dry cold produces on the skin a tonic action, which is transmitted to the digestive passages; also in the winter the appetite is greater, the digestion more active and nutrition more perfect. Under the influence of humid cold the appetite, on the contrary, diminishes, digestion languishes, the stomach *desires* fermented drinks, and we feel well from the use of generous wine. Cold, to any part of the skin, and particularly, to the soles of the feet, may occasion diarrhœa, colic, and even dysentery. Baglivi says, that a sculptor being seated for a long time on a block of marble at which he was working, experienced violent colics, lost his appetite and emaciated rapidly: these symptoms yielded to warm pedeluvia and fomentations on the abdomen. Humid cold then, produces diarrhœa as well as heat. Physiology gives us a solution of this apparent contradiction. Indeed, heat determines inflammations of the large as well as the small intestine, because the irritation it produces on the skin, is transmitted sympathetically to the digestive passages. Humid cold produces diarrhœa or dysentery, by a different mechanism. Two things here are to be considered; 1st, absorption should be in equilibrio with the exhalations; if then the cutaneous perspiration be diminished, absorption in the large intestine, as in the serous cavities and the cellular tissue, will also be less: the stools will often be liquid, and there may also supervene œdema or dropsy of one of the splanchnic cavities: 2d, the functions of the skin being diminished, the considerable exhalation taking place from it must be replaced by that of the pulmonary or intestinal mucous membrane, or finally, by the secretion of the kidneys; now, according to sound physiology, we cannot admit, that the function of an organ augments unless its vital action be exalted; it is not then surprising that the mucous membrane of the large intestine, which is the seat of a vicarious exhalation, becomes irritated and inflam-

ed; this may happen in different degrees, so as to cause diarrhœa or dysentery.

If we compare the effects of the sympathetic influence of heat and cold on the digestive mucous membrane and on that of the lungs, we will see that they are in these two membranes in an inverse relation. To account for it, it is only necessary to recollect that the bronchial mucous membrane is the seat of a continual exhalation, which is less active in proportion as that of the skin is increased, and *vice versa*; thus it has been said that lungs are the *vicarious organs* (*vicaire*) of the skin; if the action of cold diminishes that of the latter, and the secretion of the kidneys does not augment, the pulmonary mucous membrane will become the seat of a vicarious action, the exaggeration of which may lead to inflammation; this effect will be rapid in proportion as the action of the cold on the skin shall have been sudden. If on the contrary, the cold be less intense, but for a long time continued, the pulmonary mucous membrane slowly and continually irritated, will become the seat of chronic inflammation: hence the source of many consumptions.—What we have just said of the sympathetic influence of cold on the bronchial mucous membrane, enables us easily to foresee that of heat on this membrane. By exciting the action of the skin, it diminishes that of the pulmonary mucous membrane; its inflammations are also rare in warm seasons and countries, and are very frequent under opposite circumstances. It is also by this action of heat that many catarrhs which have been very obstinate during winter, disappear in the spring, and that we counsel persons affected with chronic pneumonias to pass the cold season in tropical regions.

From these facts it results that heat irritates the gastrointestinal mucous membrane, and calms the inflammations of the bronchial mucous membrane; whilst cold inflames the latter and renders the developement of gastro-enteritis more difficult; as M. Broussais has also remarked, phthisis pulmonalis is the disease of cold climates, and gastro-enteritis that of warm climates.

Pathology presents us a crowd of facts which show the reciprocal influence of irritations of the skin and digestive passages over each other. If the skin be affected with a pretty intense inflammation, we soon see thirst, anorexia, redness of the tongue, in short, all the signs of gastric irri-



tation, supervene : on the other hand, whenever the gastric mucous membrane is inflamed, we see the skin affected, from simple elevation of its temperature, even to gangrenous inflammation. We know that in all *essenital fevers* the skin is hot, and that its heat is proportionable to the intensity of the fever, that is to say, of the gastro-enteritis. Authors have remarked that in the cutaneous inflammations from internal causes, the stomach first presented signs of disease ; thus boils, and cases of erysipelas, not produced by external irritating causes, depend upon that state of irritation of the stomach, designated by the term *foul stomach*, (*embarras gastrique*,) and experience has clearly shown that the erysipelas in these cases does not demand any particular attention, and that it is the visceral affection we are called onto treat. All the maladies known under the name of eruptive fevers, are simultaneous inflammations of the skin and digestive passages ; but the affection of the latter always precedes that of the former : thus, in small pox, pain in the gastric region, vomiting and redness of the tongue appear four or five days before the eruption. When the latter has supervened, the first symptoms diminish in intensity, because the cutaneous inflammation is in some sort revulsive of that of the stomach, and if it becomes intense it reproduces the gastric disorder, because the sympathies it puts in play, are reflected principally on the still irritated mucous membrane of the stomach. What we have said of small pox, is also applicable to scarlatina, measles, &c. Let no one think that gastro-enteritis is accidental or symptomatic in these diseases ; it is a constituent part of them ; observation even proves that this holds the other symptoms under its dependence.—Indeed, confluent eruptions are announced by precursory symptoms, much more intense than if they were to be discreet ; now, these symptoms are those of gastro-enteritis : to a violent inflammation of the digestive passages then, corresponds an intense eruption ; and *vice versa*. On the other hand, if we treat the gastro-enteritis, from the time of the appearance of the preceding symptoms, we diminish very much the intensity of the eruption. But all these facts will be exposed more at length when we shall speak of cutaneous inflammations. We will not seek in the effects of revulsives, other proofs of the sympathies of the skin and digestive passages, having already examined this subject sufficiently in detail in the chapter on revulsion.

*Sympathies with the Locomotive Apparatus.*

Though less strict than in the preceding organic systems, the sympathies existing between the muscles, the articular tissues and the digestive mucous membrane, are also very marked. It is indeed very rare to see a gastric irritation without these parts being affected; every one knows the contusive pains, the sense of heaviness and torpor, experienced in the members, during foulness of the stomach and gastric fever. We have also spoken of the muscular prostration observed in the higher degrees of gastritis; but it is principally the articular tissues which present the most marked sympathies, with the digestive passages. We know that almost always gastritis is accompanied with pains in the articulations; they are sometimes so acute, that they may mask the principal disease. An officer entered the Val-de-Grâce with intolerable pains in the femero-tibial articulations, which were red and tumefied: he referred to them all his sufferings. The skin at the same time was dry and acrid, especially over the epigastrium, which was sensible, and the tongue red. M. Broussais ordered twenty leeches to the epigastrium, and by the evening the articular pains had almost entirely subsided. The next day twelve more were applied, and the third day the pains had disappeared. Acute arthritis, and still oftener chronic arthritis are in many cases produced by gastro-enteritis. We have repeatedly seen at the the Val-de-Grâce, articular inflammations (which had resisted several applications of leeches on the painful part) yield only to bleeding from the epigastrium: We shall see farther on, that gout is almost always prepared and kept up by chronic gastro-enteritis; this fact, first announced by Van-Helmont and Hoffman, has since been put beyond doubt by Darwin, Seudamore and Broussais.

*Sympathies with the circulating apparatus.*

The heart is in close connexion with the digestive mucous membrane. Every irritation of any degree of acuteness, affecting this surface, is soon transmitted to the heart, whose movements become accelerated, and experience many modifications which, joined to some other disorders, constitute the febrile state. The changes experienced by the action of the heart in gastric irritations are infinitely varied, from the slight elevation of pulse observed during

digestion, up to the *pulsus tremulus* of the last stage of *adynamic fever*. We should remark that all the changes, inflammation of the digestive passages and that of the other organs give rise to, in the circulatory system, are not produced by the modifications of the actions of the heart alone : in the condition called fever, a part of the phenomena takes place in the capillaries ; this order of vessels is doubtless intimately connected with these morbid actions.

The modifications which the circulatory system experiences in gastritis do not depend solely on the different shades of this inflammation, but also on different individual circumstances. We know that the quantity of sympathetic influence an organ receives from an irritated part is subordinate to the preponderance of action of this organ. If a subject in whom the sanguine system is highly developed be affected with a slight gastric excitation, the symptoms of the disease appertain almost entirely to this system. We will see hereafter that it is thus, that the inflammatory fevers of authors are established.

#### *Sympathies with the respiratory apparatus.*

The ingestion of a glass of cold water into the stomach, when the skin is sweating, often produces an inflammation of the organs of respiration. The presence of worms in the digestive canal often causes in infants an inconvenient cough which is made to disappear by the expulsion of these animals ; Andry has even reported a case of pleurisy produced by a lumbricus. We frequently observe in gastro-enteritis a sympathetic cough which has received the name of stomachal ; we have observed on opening the bodies of individuals affected with this disease, that it was the neighborhood of the cardia which was generally found inflamed. We can conceive that the diaphragm might then become easily inflamed. Pleurisy and pneumonia are very frequently complicated with intense gastro-enteritis ; this constitutes the bilious pneumonias and pleurisies of authors.—In phthisical patients there always supervenes in the last stages of the disease a diarrhœa depending on chronic colitis : a gastro-intestinal inflammation generally comes on to accelerate their destruction ; we also, in post mortem examinations, meet ulcerations in the intestines ; we not unfrequently find in certain points, their tunics thickened and even lardaceous and tuberculous. Certain physicians con-

tend then that the alterations found in the intestines are the result of a tuberculous diathesis which has manifested its effects in the lungs and the intestinal canal; as if it was difficult to conceive that in an individual whose lymphatic system was most developed, and who was consequently disposed to sub-inflammations, the irritation has passed from the red to the white vessels of the intestinal canal and lungs.

Therapeutics also offers us proofs of the sympathetic connexions of the digestive passages and the respiratory organs. The ingestion of alcoholics and other excitants, arrest sometimes hæmoptysis in feeble individuals, by operating a revulsion of the hæmorrhagic irritation. We know that many pneumonias and pleurisies have been overcome in their commencement by the administration of an emetic; we know also the relief produced in chronic pneumonias and pulmonary catarrhs by kermes mineral, squill, ipecacuanha, in small doses, and other stimulants; it is then always at the expense of the stomach that these dangerous successes are obtained.

*Sympathies with the organs of secretion.*

*Salivary Glands.*—Ptyalism is sometimes symptomatic of gastric irritation; the presence of worms in the digestive canal causes it not unfrequently. According to professor Pinel, the flow of saliva precedes and accompanies cholera morbus. We know that in the prelûde of vomiting, saliva flows in abundance.

*Liver.*—It has been observed that the glands situated behind mucous membranes, on whose surface their excretory ducts empty themselves, entertain the strictest sympathies with these membranes. We know that the ingestion of a sapid substance into the mouth, causes an afflux of saliva; the same relations exist between the liver, and mucous membrane of the stomach and duodenum; the presence of chyme in the latter calls the bile to it. Whenever the mucous membrane is irritated, the irritation is propagated to the liver; it secretes more, the bile flows into the duodenum and reflows into the stomach; it is thus that *bilious derangement of the stomach* is established, (*embarras gastrique bilieux.*) If the irritation be of a still higher grade it constitutes *bilious fever*; if it be carried to a still higher degree in a hot climate, it constitutes *yellow fever*. According to Broussais, hepatitis



depends on gastro-enteritis, when it is not traumatic. The alteration under the name of *adipose liver*, (*foie gras*) is the result of chronic hepatitis, kept up by inflammation of the duodenum, and we always meet these two tissues simultaneously in the dead body.

*Kidneys*.—Nephritis and nephralgia are often accompanied by vomiting. Inflammation of the digestive passages modifies the action of the kidneys and the urine then undergoes various changes in quality and quantity. The bladder, which we here place as an appendage of the kidneys, is often affected in gastro-enteritis; sometimes there supervenes in this disease a retention of urine caused by paralysis of the bladder. We also observe catarrhs of its internal membrane, especially in the grade called mucous fever. The presence of a calculus or a sound in the bladder sometimes causes vomiting.

#### *Sympathies with the genital organs.*

Moderate excitement of the stomach disposes to the pleasures of love; venereal indulgences in robust men develop appetite; during digestion they disturb this function, and reciprocally a laborious digestion after a copious repast renders one unfit for venereal pleasures. How can we explain otherwise than by sympathy, says M. Faucault, the effects of cantharides, of antispasmodic preparations and substances which have a stupifying action on the organs of generation; like insipid, mucilaginous drinks, such as the emulsions and preparations of nenuphar? It is particularly in women that the sympathies of these organs with the stomach are best marked; the irritations of this viscus change the action of the uterus, and disturb the order of its periodical evacuations. An emetic or purgative administered at the time of the flow of the menses, may produce a suppression of them, or on the contrary give rise to menorrhagia. Hæmatemesis has often been the result of the suppression of the menstrual flow. Metritis is almost always accompanied by vomiting. Fluor albus is often joined to chronic gastritis. Conception is announced by pains in the region of the stomach, nausea, vomiting and sickle appetite. Hysteria, chlorosis, and especially masturbation, in the two sexes, produce chronic gastritis. The large intestine sympathizes very closely with the uterus: drastics sometimes cause abortion; they are often employed to recall the menses; and clysters of cold water arrest uterine hemorrhage.

*Sympathies of the different parts of the digestive mucous membrane with each other.*

The mouth is hot and dry in febrile gastritis ; the lips are sometimes covered with pimples ; in the grade called *adynamic*, they are dry, black and fuliginous. In chronic gastritis, the gums become engorged ; and ulcerations sometimes form on them—only cured with the principal affection. Aphthæ are rarely idiopathic, and are connected most frequently to gastro-enteritis in lymphatic individuals. It has been very justly said, that the tongue is the mirror on which all the affections of the stomach are painted ; whenever this viscus is affected in any manner whatever, it presents some notable change ; in debility of this organ the tongue is flat, broad, humid and pale in its whole extent ; in its irritation, the tongue presents very different aspects, dependant on the various grades of the latter, and which will be indicated in the description of gastro-enteritis.

The uvula has well marked sympathetic connexions with the stomach : titillation of this part is sufficient to cause vomiting. The whole mucous membrane of the back part of the mouth sympathizes also with that of this viscus. Sympathetic angina, called bilious, is too well known to need more words on the subject.

Strangulation or simple pinching of the small intestine, produces obstinate vomiting ; that of the large intestine does not give rise to the same symptoms. Indeed the sympathies between the first portion of the intestines and the stomach, are much more strict, than between the latter and the second. It is very rare to see gastritis exist alone ; there is almost always joined to it an inflammation of the small intestine, and *vice versa* ; we very often see, on the contrary, colitis existing without gastritis. Irritating glysters sometimes develop the appetite and accelerate digestion. It is always dangerous to suppress a hemorrhoidal flux ; melæna may follow it ; and reciprocally an anal hemorrhage sometimes puts an end to this disease. On the other hand, the influence of the stomach on the inferior part of the intestinal canal is such that we often see spontaneous or provoked vomiting arrest a diarrhœa, and we know that many physicians make use of this means in the treatment of dysentery.

## CHAPTER II.

## ETIOLOGY OF GASTRO-ENTERITIS.

A great number of theses on gastro-enteritis have been written ; but most of their authors have fallen very far short of their subject. Among the dissertations on acute gastro-enteritis, we find none very remarkable except that of M. Chauvin, which presents a great deal of interest, and which we will follow in the description we are about to give of this disease.

According to the beautiful etiological method of M. Broussais, M. Chauvin divides the causes of gastro-enteritis into those stimulating directly the mucous membrane of the digestive canal, and those transmitted to it sympathetically.—He then admits a third order of causes, called by him mixed, which act at the same time immediately and mediately. He remarks that these influences develop a more or less acute, or produce only a light degree of excitement, rendering the digestive mucous membrane more susceptible of contracting an inflammation ; in other words, these causes are predisposing or occasional ; but an agent which only predisposes in one individual will become in another an efficient cause ; this division then is not regular, since it presents nothing absolute. However we should distinguish those agents requiring a train of actions to produce inflammation of the digestive mucous membrane, from those which develop it in a short time.

*Direct or immediate causes.*—By contact with this membrane, these causes produce a super-excitation, which, by reason of the continuity of their action, arrives by degrees at the inflammatory state ; at other times the agent being very energetic, develops rapidly an intense inflammation. The causes of this order comprise aliments, medicinal substances and poisons. If the aliments are too exciting, or taken in too great quantities, they may produce, no matter how little the individual may be disposed that way, a gastro-intestinal inflammation, the degree of which varies according to the energy of the cause and the susceptibility of the individual. Thus the black meats, game, salt food, peppers, aromatics, fermented fish, mustard and stimulating indigestible vegetables : also exciting drinks, such as brandy, rum, wines charged with extractive matter, very alcoholic, or adulterated with metallic salts, finally increase the susceptibility of the stomach and of the intestines to such a

degree that the least cause, or the prolonged use of these substances alone, is sufficient to determine the most violent inflammation. The mucous membrane at first strove against the effects of these excitants; the intervals of digestion were sufficient to bring it back to the healthy state: but the action of the cause being prolonged, the effect has become more lasting, the repose is no longer sufficient to dissipate the irritation, and the organ has fallen into a permanent state of inflammation. Spoiled oysters and certain kinds of mushrooms deserve to be placed among the aliments susceptible of determining an inflammation in the digestive passages. Muscles, under certain circumstances, produce analogous effects, and we have seen epidemics of gastro-enteritis, attributable entirely to their use.

Mendicinal substances employed for the purpose of combating pretended debility of the stomach, when the digestion is difficult and accompanied by offensive, acid eructations, finally produce the most rebellious inflammations; the same remarks apply to emetics and purgatives. "Emetics, whatever may be said of their peculiar property of determining vomiting, observes M. Chauvin, are nevertheless irritating substances, which, by reason of this quality, produce serious consequences when employed on an irritated stomach, or when employed too frequently. The routine custom of giving them whenever the tongue is foul, when there is head ache, when in a word we observe the symptoms of a foul stomach, (*embarras gastrique*,) produce every day an infinity of accidents which should render practitioners more circumspect in the employment of agents so energetic. How often have we seen gastro-enteritis developed immediately after the administration of an emetic! In the evening the patient to whom it has been given, showed only a slight sensibility of the abdomen, an alteration of the lingual mucus, a bitter taste, &c. but without fever; the next day the latter is declared; the tongue is dry and red, the thirst intense; the patient vomits sometimes every thing he takes; the heat of the skin becomes burning, &c.—Emetics produce inflammation of the stomach, especially, when an affection of the encephalon no longer permits the latter to perceive the sensations which produce the contractions of the abdominal parietes, whose action is indispensable to aid the stomach in the efforts of vomiting. The emetic, not being thrown off, continues to act on the mucous



membrane, and it is by this continuity of action that the inflammation is produced. M. Serres has cited a case of this kind in the *Annuaire des hopitaux* of Paris; the second letter of professor Lallemand contains several others also.

“Purgatives also acting only by the production of a transitory irritation, from whence results an augmentation of secretion in the digestive mucous membrane, must especially predispose to an inflammation of this organ, or become an occasional cause according to the dose, the nature of the substance employed, and especially according to the state of the parts on which the medicine acts. The names of cathartics and drastics indicate only different degrees of purgative substances. If we reflect that these medicines differ from each other in their chemical composition, in the impression they produce on the living tissues, we should have difficulty in according to substances so different, a specific virtue identical in all, by means of which they produce their effect; but if we consider that purgatives are irritating agents, that their administration produces pains in the abdomen, and all the symptoms of a high degree of excitement in the digestive canal, we will no longer hesitate to think that these medicines act only by their irritating qualities.— Besides if some say that purgatives act by a specific virtue, they will grant at least that they are at the same time energetic stimulants: this concession is sufficient to decide that whenever there is an inflammation of the mucous membrane, they must necessarily augment it, and that in the opposite case they must also produce inflammation by the sole fact of too high an irritation, proportionate to their nature and their dose.”

To pass from emetics and purgatives to poisons, in the consideration of the causes of gastro-enteritis, is not as M. Chauvin observes, so sudden a transition as one might suppose; for administer jalap, aloes, senna, &c. in larger doses than those usually given, and you will have the symptoms of poisoning; employ a poison in smaller doses than those in which it produces such violent effects, and if it be not vomited, you will obtain those of a purgative.

Amongst the poisonous substances capable of producing inflammation of the stomach and bowels, it is sufficient to point out the numerous corrosive and narcotico-acrid poisons; the effects these different substances produce on the digestive canal are not always the same: sometimes the inflam-

mation has not passed the stomach, sometimes it extends to the intestines. Confined in some cases to the mucous membrane, it has in others attacked at the same time the muscular and peritoneal tunics, and even the whole of the peritoneum. Most frequently very acute, this inflammation may however appear under the chronic form ; its phenomena indeed vary according to the nature of the poison, the dose or the form under which it has been administered ; according as it has been vomited a short time after its ingestion, or as it has been retained ; according to the state of fullness or vacuity of the stomach, the susceptibility of the individual, &c. Foreign bodies introduced into the stomach should be placed, after poisons, among the causes of gastritis.

Worms have been ranged by many authors among the causes of gastro-intestinal inflammation. M. Chauvin doubts, with justice, whether they produce this effect, as they are not armed with teeth or fangs sufficiently strong to produce this effect. Perforations of the intestinal canal have been attributed to them, because they have been met with, in the peritoneal cavity, in cases where the intestines present this lesion ; but the latter was a result of inflammation and ulceration, which they have taken advantage of, to introduce themselves into the abdominal cavity. However, M. Chauvin is far from denying the irritation caused by the presence of worms in the intestinal canal, which a number of proofs demonstrate ; but he thinks, with M. Broussais, that it is by an error they have been regarded as the cause of the gastro-enteritis, in which they have been seen : they are only the effect. Roederer and Wagler, in their treatise on the mucous disease, say that they have almost constantly met a verminous complication : but this only took place towards the end of the disease. M. Chauvin has heard it reported to professor Lallemand that, during one whole season, M. Dupuytren had lost almost all the children he cut for stone, from a verminous complication, the symptoms of which soon made their appearance after the operation ; and although this able practitioner, enlightened by the first post mortem examinations, had administered anthelmintics during three weeks or a month, to other children on whom he was to operate, and that these medicines had not evacuated any worms, they were nevertheless attacked by the same appearances. Is it not evident, says M. Chauvin, that here the generation of worms has been the result of the disturbance caused by

the operation in the digestives passages?—Should we then be astonished to find them so frequently in gastro-enteritis?

*Sympathetic causes.*—The numerous connexions which we have remarked between the digestive mucous membrane and all the other organs of the economy have already anticipated the fact, that a great number of the causes of gastro-enteritis, are produced by the sympathetic transmission of irritation from the latter to the former. Amongst the causes capable of developing this disease sympathetically, we should point out principally the action of the air on the skin, the inflammation of any organ whatever, the suppression of habitual evacuations, natural or abnormal, strong passions, fatigue, and watching.

M. Chauvin has not known how to appreciate the action of heat and cold on the digestive canal, and the mechanism of the production of gastro-enteritis, which the first of these agents developes. After having observed the effects of gastro-enteritis on the skin, and those of the cutaneous affections on the digestive passages, physiological physicians have been led to think that the excitement produced on the skin by heat, must be transmitted in the same manner to the stomach and intestines. M. Chauvin does not admit this opinion: according to him the augmentation of the action of the skin, or the irritation of this membrane, must on the contrary, prevent the mucous membranes from contracting an inflammation, by the habitual derivation resulting from it; because, the more the functions of the skin are exaggerated, the more those of the mucous membranes must be diminished; and if there exist, says he, a coincidence between the affections of the skin and those of the internal tunic of the digestive canal, it is because these two organs having a great analogy in structure and functions, the cause, whatever it be, which produces on the former a herpetic or variolous eruption, &c. must have the same tendency to produce an analogous effect on the latter. According to this principle M. Chauvin attempts to explain the frequency of gastro-enteritis in hot countries; he attributes it to *weakness* of the digestive organs, determined by the habitual exaltation of the action of the skin. The inhabitants of these countries use stimulants to excess for the purpose of remedying this: moreover, the stomach not having sufficient activity to digest the food, redoubles its efforts to overcome the difficulty, and this increase of action soon produces a real inflammation.

M. Chauvin has wandered very far here from the principles of physiology, which he has generally followed in his dissertation ; if this physician had been aware that we cannot study in mass, the sympathies of the whole mucous system with the skin, if he had known the inverse relation of the connexions of the gastro-intestinal mucous membrane with the skin, and that of the lungs with the same organ, he would have known also how heat predisposes to inflammation of the stomach and small intestine, and actually develops it, whilst cold renders these affections more rare ; and how these two agents produce on the mucous membrane of the lungs and colon opposite effects. The details into which we have already entered on this subject relieve us from the trouble of recurring to them again here.

A vast number of gastro-enterites have their origin in inflammation of other organs. We have already seen, when speaking of the general phenomena of irritation, that inflammation in any of the organs, sufficiently intense to produce the febrile state, was accompanied with sympathetic gastro-enteritis, if not during its whole duration, at least during the first period of its existence. A great number of them owe all their danger to this complication. It is almost always to this sympathetic influence of irritated organs on the stomach, that we must refer what authors have said of the *essential fevers* which complicate the phlegmasiæ. If all inflammations be susceptible of developing sympathetically a gastro-enteritis, there are some of them to which this concomitance of action more particularly belongs. We will put in the first rank those of the skin, and in an article consecrated to cutaneous inflammations, we will show the relation existing between these, and those of the digestive passages. A connexion almost equally strict, is noticed between this last affection and encephalic and arthritic irritations. Often these latter are predisposed, or even produced by acute or chronic gastro-enteritis, and at other times they develop gastro-enteritis in their turn. It is not only acute inflammations which, by the sympathies they put in play, produce irritation of the digestive passages ; we also observe it in a crowd of chronic inflammations, particularly in their last periods, when they bring on disorganization of the tissues they affect : then the sympathies which existed in the acute state, spring up again, and are exercised with new activity. Principally felt by the gastro-intestinal



mucous membrane, the inflammation which they there develop passes into the chronic state by the continuance of the action of the cause; the inflammation is almost always extended to the large intestine, and terminates by producing, in the intestinal canal, ulcerations and other disorganizations: it is to this complication that we must refer *hectic fever* and *colliquative diarrhœa*, which come on in the last stage of phthisis pulmonalis, of cancer and other disorganizing irritations, and which are continually exasperated by the administration of tonics, under the pretext of remedying the weakness they are attributed to.

Amongst the causes of sympathetic gastro-enteritis, we should place in the first rank, wounds and surgical operations. Their influence on the digestive passages is sometimes instantaneous by the pain they produce. It is this complication which gives rise to *traumatic fever*; it is by the passing of this sympathetic inflammation to a more elevated degree that the first sometimes *degenerates* into *adynamic fever*, as the ontologists say.

The suppression of a habitual evacuation, also gives rise to secondary gastro-enteritis, when a heating regimen or other stimulating influences predispose the stomach to inflammation. We have explained in the article on revulsives the production of these metastatic effects and will not here return to them; we will confine ourselves to the recollection that often the gastro-enterites, which we observe after the suppression of habitual evacuations are not, as is supposed, the result of this suppression, but have really produced the latter by revulsion; only the inflammation then of the digestive passages becomes more intense, and its phenomena are more strongly marked.

Excessive fatigues, in those who are not in the habit of undergoing them, give rise frequently to acute gastro-enteritis; immoderate mental labor, and particularly long watchings, exercise also on the digestive passages a more serious and more constant influence. It is not rare to see close study determine an acute gastro-cephalitis; most frequently it gives rise to chronic gastritis. We know that in general, literary men, have little appetite, difficult digestion, obstinate constipation—that they are lean, and that many of them are affected with pretended neuroses of the stomach, and principally with hypochondria.

M. Chauvin has barely named the depressing moral affec-

tions amongst the causes of inflammation of the stomach ; but their unhappy influence on this viscus is too important, from its frequency and serious character, to be passed over without farther details. We find them in the thesis of M. Lassere, who has treated this part of the etiology of gastro-enteritis like a physiologist. After having fixed the attention on the importance of the part played, by the intestinal canal, in the economy, on the sensibility of the mucous membrane, the sympathies which it maintains with the other organs, M. Lassere expresses astonishment at the unfrequent occurrence of its inflammation, considering the great number of stimulating influences tending to produce it.—To those resulting from *ingesta*, and the lesion of the different parts of the economy, it is necessary also to add the depressing moral affections, to which man is so often a prey during the course of his existence. All the passions, strong emotions, constrictions of pain, all disagreeable impressions, are felt also in the region of the stomach ; its mucous membrane is affected in all the passions, and the impression which they produce there, determines as many grades of inflammation as there are shades in their development. A fit of cholera, a strong fright, the pain produced by distressing news, gives rise to the most violent gastritis ; in the case, on the contrary, where the stomach is submitted to the influence of a grief, for a long time continued, the impression which this viscus receives is less vivid, but it persists, and maintains, in its mucous membrane, a chronic irritation. The epigastrium then is often the seat of a painful oppression ; the appetite diminishes and finally disappears ; the digestion is painful, there exists habitual constipation, the eyes are languishing, the face is discolored and yellowish, the sleep is disturbed by distressing dreams and nightmare, and the body becomes more and more emaciated every day.

The patient remains in this state as long as the cause continues ; it is very rare that the influence of the most methodical treatment puts a stop to chronic gastro-enteritis, as long as grief does not give place to contentment of mind, or at least to indifference. Under opposite circumstances, irritation of the stomach, after remaining a long time stationary, acquires often more intensity, whether by the exasperation of the cause which has produced it, or by the influence of other agents. The patient then falls into a state of hypochondria, which abridges his existence, or the chronic gas-

tritis leads to disorganization of the stomach, induration of the liver, &c. At other times it passes into the acute stage and becomes ordinarily fatal in a few days. Such not unfrequently are the consequences of unhappy love, jealousy, disappointed ambition, nostalgia, &c. Amongst the distressing moral affections, there is not one which produces more unhappy consequences than the latter; to the gastritis which it determines, is almost always joined an encephalic irritation. This double lesion much more rarely remains stationary than those produced by analagous causes. If the patient be not promptly restored to the object of his regrets, or if he be not sustained by the hope of soon seeing his own fireside, the inflammation often passes into the acute state; it presents then the most serious form, and it is rare that it does not produce a fatal result. Those who have seen the practice of military hospitals have had frequent occasions of being convinced of this sad truth.\*

*Mixed Causes.*—M. Chauvin arranges amongst these causes the ingestion of cold drinks into the stomach, the action of miasms and the irritation of the liver.

The action of very cold drinks on the stomach, when the body is sweating, may give rise to the most violent gastro-enteritis. We read in the dissertation of M. Quincieux, on gastritis, that a soldier after having heated himself very much on a hot day, drank at one draught a bottle of beer which had been plunged in ice; six hours after having taken this drink, he felt a violent shivering followed by heat; soon after he felt an acute pain, dry heat, and a sense of tension in the epigastric region; an inability to keep on the stomach even the mildest drinks. Two bleedings and emollient glysters did not calm the symptoms; the anxiety was extreme, the thirst ardent, the pulse frequent and the respiration difficult. The fourth day there was prostration of strength, small depressed pulse, shivering, sudden diminution of pain, livid face, hiccup, and death on the fifth day of the disease.

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\* It was thought several years ago, that an irresistible argument had been found against the new doctrine, by alledging that the redness of the digestive passages scarcely deserved to fix the attention, because we often observe it in bodies of men surprised by death in full health, in persons for example who have been executed. Hence they conclude that this tint is natural; they doubtless did not reflect on the influence exercised on the brain by the cruel anguish which precedes the last moments, on all the causes of gastro-enteritis, to which those are submitted, who live, during several months, in a dungeon, under the weight of a condemnation for capital crime.

On the examination of the body, the mucous membrane of the stomach was found inflamed and gangrenous in several places; the œsophagean and intestinal orifices were very red. M. Majorlin reports in his lessons, that a surgeon, when going into the country to see a patient, on a very hot summer day, drank with avidity several glasses of beer which had been plunged in a well: he died a few minutes after in the most cruel anguish; and on opening the body, several gangrenous patches were found in the stomach. It is easy to conceive of the development of inflammation of the stomach under these circumstances; cold is in truth a sedative; but when its impression has ceased, a strong reaction is soon developed, which is then more violent in proportion as the action of the skin is suddenly suspended and is replaced by irritation of the stomach. There is then double stimulation of this viscus; for the ingestion of cold water, when the skin is in an ordinary state of heat, does not give rise to any disagreeable symptoms. We should then principally attribute gastro-enteritis, in this case, to the *transfer* of irritation from the skin to the mucous membrane, at the moment when its irritation was solicited by a direct stimulant.

M. Chauvin places irritation of the liver amongst the mixed causes of gastro-enteritis; we agree with him that inflammation of this gland may determine sympathetically or by way of continuity that of the digestive mucous membrane. But he contends moreover that the irritation of the liver impresses on the bile irritating qualities, and that this fluid, by running into the digestive canal, may determine its inflammation directly. It is very true, that secreted fluids may acquire irritating qualities, when the tissues forming them are inflamed, as the tears and nasal mucus prove, which in ophthalmia and coryza, irritate the skin when they touch it; as is also proved by the case reported in the *Journal complémentaire du dictionnaire des sciences médicales*, by Bégin, who, when opening with M. Broussais the body of a man dead of gastro-enteritis with adynamic symptoms, experienced an insupportable burning sensation on touching the matters contained in the intestine; his whole hand became tumefied, and an abscess formed on one of his fingers. M. Broussais experienced the same sensations, though neither were wounded by the scalpel. But can we conclude from these facts that the bile is capable of producing gastro-enteritis? This liquid only acquires irritating



properties under the influence of inflammations of the liver, as M. Chauvin himself avows : but, we must remark that this inflammation is always developed (when it is not the result of external violence,) under the influence of an irritation of the stomach and duodenum, which is transmitted to this gland. Thus then the alteration of the bile, if it ordinarily exist and the fact reported by M. Bégin be not an anomaly (*une anormalie*,) cannot be ranged amongst the causes of gastro-enteritis ; it may only in some cases add to the intensity of the gastro-enteritis ; and in asserting that in all cases where the liver is irritated, the bile is capable of producing inflammation of the stomach and intestines, M. Chauvin appears to us to have committed an error, which would not be without bad consequences in theory, and worse in practice.

Amongst the mixed causes of gastro-enteritis, deleterious miasms are without contradiction the most serious, and those which merit most our attention here. We shall confound under the name miasms, as M. Chauvin has done, the putrid exhalations disengaged, from the human body, healthy or diseased, from animal or vegetable matters putrifying in marshes, lakes, and ponds while drying up ; from sinks and cemeteries, where the interments are not made with due precaution ; from anatomical rooms, hospitals, and camps, where a great number of people are collected together.

The deleterious miasms operate with an activity and intensity differing, according to several circumstances : sometimes their action is exercised with an astonishing rapidity, the nervous system is, if we may use the expression, paralyzed : the principle of life is stilled ; and we see individuals perish a few instants after having penetrated into the infected area. Most frequently the action of miasms is less active : sometime after the infection, an inflammatory reaction, is developed, which ordinarily has its seat in the digestive passages, the brain and sometimes the lungs.

These noxious agents penetrate into the economy by three different ways : by the skin, the lungs and the stomach.—The absorption of miasms by the skin is sufficiently demonstrated by the experiments made by Bichat on himself, and which he has set forth in his *Anatomie générale*. It is certain that they are absorbed also by the air passages, where they penetrate with the atmospheric air. Lastly, mixed with the aliments and saliva, they are introduced into the

stomach, on which they act directly. No matter how miasms penetrate the stomach, it is incontestible that their fatal influence is exercised principally on this viscus. We cannot doubt the fact after seeing those individuals who reside in infected places, become affected with anorexia, vomiting, colics and diarrhoea : we can still less call it in question when we observe that the principle symptoms of typhus, yellow fever, the plague, and the alterations which these diseases leave on the dead bodies, appertain to gastro-enteritis. How can we explain the fact that miasms introduced by absorption from the lungs or skin irritate especially the digestive mucous membrane ? It is certainly impossible to do it ; but the fact is not the less true. Have we any more knowledge of the manner in which the virus of small pox exercises its first influence on this organ ? How does arsenic deposited in the cellular tissue or in the vagina, ulcerate the intestinal canal and leave the other tissues untouched. When we compare the action of deleterious miasms to that of the two last agents, nothing is proved in favor of the opinion of those who maintain the existence of general morbid causes.

M. Chauvin observes with justice that the individuals on whom these causes act with most intensity, are those who are found in a state of debility, those especially who are in a febrile state produced by another disease, or who, addicted to table excesses, are always in a state of excitement ; thus it is observed that in epidemics of gastro-enteritis, those persons, who, in the hope of giving themselves strength, use stimulating drinks in large quantities, bring on a fatal predisposition, and rarely escape from the danger they wish to shun. It has also been remarked that miasms do not act constantly with the same activity ; an infinity of circumstances may second, augment and even destroy their action. The habit of living in an infected atmosphere, may, in some sort, diminish the fatal influence of it : thus the natives of marshy countries resist advantageously the murderous causes which besiege them, whilst strangers succumb with astonishing rapidity. The activity of these emanations is greater in warm countries, and during the heat of the summer and autumn. The time most favorable to their action is the night : first, because the body fatigued cannot react with sufficient force to resist the introduction of these injurious principles ; next, because these miasms held in solution by

the air, by means of the strong heat of the day, are condensed and fall again after the setting of the sun, as soon as a certain quantity of caloric is taken from them.

Such are the modifiers, (*modificateurs*,) capable of developing inflammation of the gastro-intestinal mucous membrane. We pass on to the description of its phenomena; we should first observe that by the expression *gastro-enteritis*, M. Broussais does not understand the inflammation of all the digestive mucous membrane, but that of the stomach and the small intestine, which are always observed together; and that he designates the inflammation of the colon, (dysentery and diarrhæa,) by that of *colitis*: we shall follow this division in the description we are about to present, of these inflammations.

### CHAPTER III.

#### LOCAL AND GENERAL PHENOMENA OF INFLAMMATION OF THE DIGESTIVE MUCOUS MEMBRANE.

##### ARTICLE 1ST.—PHENOMENA OF ACUTE GASTRO-ENTERITIS.

Gastro-enteritis does not always begin in the same manner. The invasion is sometimes rapid, at other times slow. In the first instance, the patients experience during several days an unaccustomed heat after eating, a sensation of weight, of compression at the epigastric region, wandering pains in the abdomen and of lassitude and uneasiness. The throat is hot and dry, the thirst more or less distressing, desire for cold drinks, the eyes are dejected, the complexion pale or yellowish. The patients, frequently, are already affected with catarrh of some of the mucous membranes, such as coryza, ophthalmia or angina. The appetite is sometimes augmented, most frequently diminished; digestion though still pretty well performed, is frequently accompanied by slight colics, acid eructations, hiccup and nausea; there is sometimes diarrhæa, and sometimes constipation. Often gastro-enteritis begins by symptoms of *foul*

*stomach, (embarras gastrique.)* The patient has a disgust for aliments, and a sense of fullness at the epigastrium ; he has a clammy mouth, with bitter taste ; the tongue is thick and broad with a white or yellowish coating. Often this condition is soon dissipated under the influence of diet, the administration of an emetic or other stimulant ; but most frequently also emetics exasperate the irritation, and all the phenomena of gastro-enteritis are declared. This inflammation supervenes sometimes without any precursory symptoms, when the causes have acted with energy ; after a table excess for example. The disease ordinarily commences then by vomiting ; the matters vomited are mucous or highly mixed with yellowish or greenish bile. The vomitings do not exist always ; they are sometimes replaced by alvine dejections, which are more abundant in proportion as the seat of inflammation is near the termination of the alimentary canal ; they are accompanied by colics and tenesmus. In some circumstances the vomiting and diarrhœa exist simultaneously ; which, moreover, vary according to the predominance or equality of the inflammation of the stomach and intestines. M. Broussais, has, indeed, observed that when the inflammation of the stomach and small intestine predominates over that of the colon, diarrhœa does not exist.

Ordinarily the patient experiences sensibility of the epigastrium, and if this region be pressed, the face is distorted and presents a manifest expression of pain, at the same time that he repulses the hand that increases his sufferings. Often in the sub-acute state of gastro-enteritis, and sometimes even in that of the greatest intensity, pain is entirely wanting, even when we attempt by pressure to develop it—we cannot attract the attention of physicians too much to this fact, already discussed, when treating of irritation in general. Practitioners would fall into a very great error, as M. Chauvin has remarked, if they believed that pain is an inseparable companion of inflammation of the stomach and intestines. To prove this, he has borrowed two facts from Morgagni, and he might have drawn a great number of others from the same author, from the *Histoire des phlegmasies chroniques*, and from several other works. Morgagni cites a case of gastro-enteritis terminating by gangrene, in a man showing no signs of pain in the abdomen except on the first day of the disease, and who, through the suc-



ceeding days up to the thirteenth, when he died, presented no other symptoms of inflammation, than thirst, dryness of the tongue and fever, which after having ceased, returned on the third day ; this threw the physicians into a great perplexity, for they were unable to conceive how the intestines could be inflamed, without the existence of pain.

The same author mentions a woman aged 50 years, who after a trifling fall, was taken with vomiting of stercoral matter. As there was constipation, two doses of mercury were given, of two drachms each, which produced several stools. The patient died about the fifth day, from the invasion of the disease, without the existence during all this time of the smallest appearance of convulsions, pains, or fever, and the post mortem examination notwithstanding showed that the inflammation had been carried so far as to produce gangrene of the small intestines. Let us pass now to the examination of the sympathetic phenomena.

It is rare that gastro-intestinal inflammation arrives at a certain degree of intensity without the brain being sympathetically irritated. Cephalalgia is almost incessant in this disease, and often the irritation giving rise to it passes to a more elevated degree. The exercise of the intellectual faculties is then disturbed ; there is at first only slight aberrations of judgment, and if the gastro-enteritis progresses, delirium is established ; the patient is ordinarily morose, and except in very irritable individuals, it is relative to the intensity of the inflammation. Sometimes the patient is deaf and tranquil, and this condition is joined to a state of stupor more or less profound ; the sensibility of the senses is obtuse, when questioned he answers reluctantly or not at all, at the same time the muscular system is prostrated, the urine accumulates in the bladder, the dejections take place involuntarily, (*adynamic fever* ; ) at other times the delirium is noisy, furious, and then the sensibility of the senses is exalted, the answers are quick, we observe convulsive movements of the face and often also in the muscles of the members, subsultus tendinum, carphologia, &c. (*ataxic fever*.)

The labors of M. Lallemand authorize us to think that in the first case, the *substance* of the brain is affected by irritation, whilst in the second it is confined to the *meninges* and *surface* of the brain. Thus then it is the defect of innervation, (a result of the irritation of the encephalic sub-

stance and of the congestion of which it becomes the seat, that causes the muscular prostration, which is still increased by the concentration of vitality in the inflamed viscera. The contraction of the muscles does not take place then, because it is no longer solicited, and not because these organs are affected with asthenia. It seems to us that in order to explain the muscular prostration, physicians have not taken sufficient account of the cerebral affection, and that they have made the concentration of forces in the viscera play too prominent a part. If this were the only cause of this phenomenon, we should not observe these two forms of gastro-enteritis, ataxia and adynamia, differing so much; for this inflammation exists in one as well as in the other : but in the first, the irritation is limited to the arachnoid and pia mater and extends at farthest to the surface of the brain, whilst in the second it affects deeply the substance ; and we know the different results of these two lesions, to the muscular system. Finally, the constant co-existence of stupor, the suspension of the mental functions, with the muscular prostration still farther confirm the opinion we here advance.

We know that very frequently, when high delirium and agitation have continued for some time, stupor and prostration take their place : it is very rare that death happens in the midst of the first series of symptoms ; when the disease is to have a fatal issue, adynamia is joined to ataxia, to speak the language of the ontologists ; that is to say, that the irritation limited to the meninges and surface of the brain, is extended more deeply into this viscus, or that a purulent or sero-purulent collection forms in the arachnoid.

M. Chauvin justly remarks, that when the affection of the brain or of its membranes has arrived at this point, the pain produced by the gastro-enteritis diminishes or disappears entirely. The physician may easily suffer himself to be imposed on then by the absence of this symptom, may mistake the principal seat of the affection, and find himself conducted in this manner to the most fatal errors in the treatment, if he did not consult all the other signs of the disease. It is necessary then, says M. Lallemand, to interrogate with so much the more care, the other phenomena, which being independent of the sensibility and will, do not vary. Thus, although a patient have a supple abdomen, without any manifestation of pain when we compress the epigastric, un-

bilical, and right and left iliac regions, if the skin be dry and burning, if the tongue be red, the pulse frequent, &c. you will recognize, notwithstanding the absence of sensibility and contraction of the abdominal parietes, an inflammation of the gastro-intestinal mucous membrane.

The heart, an organ eminently irritable, united by the most intimate connexions with the gastro-intestinal mucous membrane, receives as soon as the brain, the sympathetic stimulation excited by the inflammation of the latter. It beats with more frequency and quickness, and impresses on the pulse this double character which undergoes many modifications, according to the intensity of the inflammation and the individual constitution. In the commencement of the disease, it is sometimes as highly developed as in the parenchymatous inflammations ; but this circumstance is rare, and when it is presented after several days of disease, we should fear that an inflammation of the organs of respiration is joined to that of the digestive passages. In the greater number of cases, the very considerable frequency of pulse is almost always accompanied by littleness and concentration of the pulsation of the arteries. These two phenomena appear to be a general result of very acute irritation of the viscera, which, far from developing the movements of the heart, depresses the action of this organ, which no longer acts tumultuously. The pulse is then small, compressed, very frequent, sometimes intermittent, or almost insensible and convulsive. These last characters announce that the disease is very serious and that it tends to a fatal termination.

The frequency of the pulse is not always in direct relation with the intensity of the disease ; if there are individuals in whom inflammation of the digestive passages may produce the greatest ravages without being pointed out by pain, there are some also in whom the pulse presents very little agitation, though the inflammation has arrived at a high degree. The lymphatic temperament is that in which we most frequently meet this irregularity (*anormalie* ; ) it is easy to be convinced of this by reading the observations laid open in *l'Histoire des phlegmasies chroniques*. However this may be, the intensity of the febrile state responds always to that of the inflammation.

The organs of respiration are influenced by acute gastro-enteritis : when it is intense the respiration is ordinarily

more frequent, laborious and broken by a slight cough commonly denominated *gastric* ; most frequently it is dry, but sometimes accompanied by a frothy expectoration, in some cases mixed with sanguinolent streaks, which has often imposed on practitioners, and made them direct their treatment against a symptom of which no trace could be found on opening the body. It is to the author of the *Phlegmasies chroniques* that we owe the knowledge of the etiology of this sympathetic disturbance of respiration.—The characteristic of this cough is, that it does not come by fits, as in inflammation of the lungs, but at short intervals ; it is often accompanied by a pain extending over the whole chest, or confined to its base. If the sympathetic irritation producing the cough, continues, it may bring on a real pulmonary catarrh or even pneumonia.

The action of the secreting organs is always disturbed in acute gastro-enteritis. The liver, connected with the intestinal canal, by the membrane lining its excretory ducts, participates in its irritation ; the secretion of the bile is disturbed and almost always more abundant ; the urine is scanty, red and often fetid, and its emission is accompanied by a painful feeling ; when the gastro-enteritis has arrived at a high degree of intensity, a remarkable mouse odour emanates from the patient, which professor Lallemand attributes to the absorption of a part of the urine, accumulated and decomposed in the bladder ; he was led to admit this cause because he has remarked the same odour in many individuals affected with diseases of the urinary organs. This symptom supervenes almost always in an advanced period of gastro-enteritis ; ordinarily when it approaches a fatal termination.

The other mucous membranes are also sympathetically irritated, especially at their origin. The orifice of the urethra is red ; the internal tunic of the bladder is sometimes affected, especially if the urine accumulate in its cavity by the inertia of its muscular tunic ; the conjunctiva is injected ; the pituitary membrane is dry ; the mouth clammy in the first shades of gastro-enteritis, becomes dry and hot as soon as this inflammation has progressed. The condition of the tongue, as we have before said, is always modified in all the grades of gastro-enteritis. The examination of this organ is then a precious means of diagnosis in this disease, and we cannot attach too much importance to the different



aspects it presents. In what has been called foulness of the stomach, (*embarras gastrique*,) the tongue is white or yellowish, and ordinarily broad and thick; as soon as the irritation passes to a more elevated degree, the circumference and point of the tongue become red. This redness is more intense in proportion as the inflammation makes progress: it is the pathognomic sign of gastro-enteritis; whenever it is present the latter exists, and this proposition is subject to no exception. But the red border of the circumference is not always seen, and the gastro-intestinal inflammation nevertheless exists; the tongue then presents on its surface, and particularly at its anterior part, a multitude of small projecting red points, sometimes the color of blood, at other times violet, which are painted on the pale color or on the mucous coating through which they break. This aspect is presented rather in light gastro-enteritis and that which is chronic; and the red border is shown almost constantly more or less plainly in the acute state of this inflammation. Most frequently the centre of the tongue is whitish or yellowish, and this color is attributable ordinarily to a coating, easily removed in the commencement of the disease, soon to be replaced, and which on the contrary, in an elevated degree of the inflammation, seems like a white pellicle strongly adherent to the tongue. Sometimes instead of this color in the centre terminated by the red point and circumference, the tongue is of a bright red over its whole extent; one would suppose that it had just been dipped in blood, and sometimes we see this fluid oozing from its surface. This condition of the tongue announces a violent inflammation, especially if joined to dryness which is ordinarily greater in proportion as the gastro-enteritis is more intense; but the latter may be very violent though the tongue be still moist; but then it is very red at the point and circumference. The dimensions of the tongue also merit great attention in semiology. The more intense the gastro-enteritis, the narrower it is. In the commencement of the disease it is broad; after a time it contracts and narrows particularly at its point. When the inflammation has arrived at its last stage, the mucus covering the tongue becomes brownish and even black and scaly; then it becomes dry, wrinkled and cracked. The gums, teeth, and lips are also covered with this *fuliginous coat*.

The mouth, the pendulum palati, its half arches and the

pharynx often participate in the redness of the tongue ; in lymphatic subjects and principally in infants, there sometimes takes place an aphthous eruption in the mouth.

Loss of appetite is one of the first premonitors of gastro-enteritis ; sometimes, however, we see it developed in an extraordinary manner before the appearance of the symptoms of this inflammation. Absolute inappetency continues during the whole duration of acute gastro-enteritis, and the return of appetite is the signal of convalescence ; sometimes however, the desire for food returns as soon as the stomach is sound whilst the small intestine is still diseased.

Thirst and desire for cold acidulated drinks, ( which, however, is not constant, ) is also one of the premonitory symptoms of this inflammation ; it becomes more intense in proportion as the latter progresses. It is seldom, except in the last period then, that all the sensations are abolished and that the thirst ceases to torment the patient. Sometimes spasm of the œsophagus does not permit him to satisfy it ; deglutition becomes impossible. When this ardent thirst does not diminish with the other symptoms, it is a dangerous sign : the disease then almost always takes on a chronic character. According to M. Broussais the thirst is more intense when the inflammation is extended from the stomach to the small intestine ; and he regards it as a sign of this extension.

The skin is always dry and parched in gastro-enteritis ; its temperature also is always augmented ; it often presents an acrid and pungent heat, sometimes in its whole extent, at other times in certain parts, such as the belly and chest. All exhalation from it ceases, or partial sweats come on for a moment, which is an unfavorable omen. Later and in the last degree of the inflammation, the skin is sometimes covered with petechiæ or more extended ecchymoses. Gangrenous eschars take place on the points supporting the weight of the body. The skin at first is red, soon becomes livid, and passes into the gangrenous state, without having presented the symptoms of acute inflammation—vesications produced by epispastics and rubefacients experience often the same accident.

The countenance of the patient announces suffering and anxiety ; the eyes are red, at other times dull and downcast ; the lids are half opened ; the cheeks are prominent and of the color of wine lees ; the alæ of the nose are dila-

ted, and the lips dry. The hearing is generally weakened and sometimes there is entire deafness. This symptom may arise from inflammation, which extends through the eustachian tube to the tympanum. Morgagni in a similar case found the tympanum and neighboring cavities full of a purulent matter. He cites Valsalva, who had frequently seen the tympanum filled with water, in subjects in whom deafness had supervened during acute diseases. It is not rare to see, during the course of gastro-enteritis, a phlegmonous inflammation appear in the parotid region, sometimes becoming revulsive of the first, and at other times adding to its intensity.

Besides the feeling of fatigue and contusive pains, the patient experiences in the limbs, gastro-enteritis not unfrequently provokes an irritation of the fibro-serous system of the articulations, sometimes sufficiently intense to determine inflammation and suppuration of these tissues. M. Bégin says he has several times observed, at the Val-de-Grace, in subjects who had sunk under violent gastro-enteritis, all the great articulations phlogosed on their internal surfaces, and filled with thick yellow pus, analagous to that of the cellular tissue. We have seen three analagous cases in the same hospital, and two in that of the royal guard.

The symptoms of which we have just presented a picture, do not exist in all individuals, nor with the same intensity. Several amongst them ordinarily predominate, according to the mode of reaction which the inflamed viscera exercise on the economy, according to the intensity of the inflammation, the causes which have determined it, the organ whose inflammation happens to complicate it, and individual constitutions. M. Duponchel has pointed out, as M. Broussais has done, the different forms impressed by these circumstances on gastro-enteritis; they correspond to each of the essential fevers of authors. If inflammation of the digestive passages come on suddenly in a robust individual, in whom the sanguine system is predominant, the sympathetic phenomena consist principally in exaltation of the action of the sanguine capillary system. The pulse is full, hard, and frequent; if the inflammation be intense, it is small and concentrated, and rises after a bleeding. We observe a redness and and halituous heat of all the cutaneous surface. The respiration is frequent, the urine strongly colored, the head-ache severe; in a word we see *inflammatory fever*.

If irritation predominate in the liver, the gastro-enteritis is accompanied by bilious symptoms: this constitutes *bilious* or *gastric fever*. In the first degree of irritation of the stomach, of the duodenum and of the liver, we do not yet observe febrile symptoms. There is cephalalgia, anorexia, clammy, bitter mouth, and desire for acidulated drinks; the tongue is thick, broad, and covered with a yellowish mucous layer; the patient feels a sense of heaviness at the epigastrium, and weakness of the extremities; this constitutes *l'embarras gastrique*. Abandoned to itself, or treated by emetics and other stimulants, the irritation producing it may pass to a more elevated degree, and awaken sympathies. Then the thirst is distressing; the patient ardently desires cold and acid drinks; there is often pain in the epigastrium, constipation or diarrhœa of bilious matter and vomitings of the same nature; the pulse is hard and frequent, the heat acrid and pungent; the skin dry and very hot, makes the patient almost always experience, especially at the abdomen, that impression called *pricking heat* (*chaleur mordicante*.) The coloration of the skin is sometimes united to a yellowish tint, particularly marked around the alæ of the nose.

*Bilious fever*, it is said, may be complicated with *inflammatory fever*; this constitutes the *causus* or *ardent fever*; that is to say, that gastro-enteritis may exist in a robust individual of sanguine temperament, with a predominance of hepatic irritation. *Cholera morbus* has also been ranged amongst the varieties of *gastric fever*, though it may exist without fever, as well as *l'embarras gastrique*, to which they have assigned the same place in the nosographic table. We will soon present some important documents, calculated to establish the true nature of this affection.

In weak, lymphatic individuals, women and children, the irritation sometimes predominates in the mucous cryptæ; in such cases, one of the predominant phenomena of gastro-enteritis, is an augmentation of secretion throughout the whole extent of the gastro-intestinal mucous membrane; this is *mucous fever*. It is often accompanied with aphthæ on the tongue and parietes of the mouth, and worms in the intestinal canal. The pulse, in general not very frequent, is small and weak; the tongue is white and moist; the face pale, and heat inconsiderable.

The forms of gastro-enteritis just examined by us, are not



generally attended with a great deal of danger ; but if the inflammation be neglected, or exasperated by stimulating treatment, the intensity is augmented ; the sympathies are more active, and the irritation they excite in other organs, becomes sufficiently strong to increase the severity of the disease ; the meninges and the brain are then ordinarily irritated. Delirium, carphologia, muttering, agitation, convulsive movements, and subsultus tendinum supervene.—The heat of the skin and state of the pulse experience alternate changes ; the latter, sometimes slow and feeble, becomes frequent and hard ; the skin sometimes cold and moist, is in a few hours afterwards, hot and dry.—This constitutes *ataxic fever*. This group of symptoms results then from the co-existence of an encephalic irritation, (more or less intense, elevated or not to the degree of inflammation,) with gastro-enteritis. Many physicians have opposed to this etiology, the nervous phenomena in *ataxic fever*, and have contended that inflammation of the digestive passages should not be considered, in all cases, as the cause of encephalic irritation ; that these symptoms may be produced by this latter, which may also be the sympathetic result of any other inflammation than that of the stomach and intestines. No doubt that the irritation of the meninges or encephalon may be developed, directly or sympathetically, by any other influence than that originating in the inflamed digestive passages. But, one of two things must happen ; either the encephalic irritation will be sufficiently intense to excite febrile phenomena, or it will not be. In the first case, elevated to the degree of inflammation, it will produce sympathetically that of the intestinal canal ; for in this grade it is accompanied by it *always* ; and then it is of little importance in the question, whether the gastro-enteritis be primitive or consecutive ; it will exist, and its influence on the different organs and on the brain, already inflamed, will be always the same. In the second case, we do not observe the *ataxic fever* of authors. The encephalic irritation may excite various disturbances in the nervous system ; but thirst, repugnance to food, alteration of the lingual mucous, redness of the tongue, disturbance of the secretions, will not be observed ; for if we did see them, there would exist a gastro-enteritis, and consequently, the general phenomena of each of the fevers of the ontologists. It is necessary still farther to take notice, that, in cases where the encephalic

phalic irritation is produced by a pleurisy, a pneumonia or peritonitis, &c. the gastro-intestinal mucous membrane receives, at the same time, the sympathetic influence exercised by these inflamed viscera ; for, as we have said elsewhere, every inflammation sufficiently intense to cause febrile phenomena, is accompanied by irritation of the digestive passages, at least during the first period. The *ataxic fever* of authors then, appertains to gastro-enteritis, like their other *essential fevers*.

All the forms of gastro-enteritis, except certain cases which may cause death without passing to another state, end in *adynamic fever*, when the gastro-intestinal inflammation takes on greater intensity. The skin presents then a livid color, the tongue is contracted, pointed, tremulous, dry, chapped, and covered with a fuliginous coat extending over the gums, teeth and lips ; the breath is fetid ; the dejections often involuntary and exhaling like all the excreted fluids, an infectious odour ; the belly becomes tympanitic ; the pulse is contracted, small, and frequent ; in certain cases an eruption of petechiæ takes place ; the patient is in a stupor ; the delirium is tranquil ; the muscular forces are prostrated ; he lies in a supine position, and keeps the same attitude.

The symptoms of gastro-intestinal inflammation are too evident in *adynamic fever* for it to be possible, in some cases, not to refer it to gastro-enteritis.

M. Broussais formerly thought that these symptoms might be produced, under some circumstances, by inflammation of any other organ. But when noticing the *Pyrétologie physiologique* of Boisseau, who adopts this opinion, the author of the *Examen* declares positively that, though he admitted it formerly, he rejects it at present.

Contagious and epidemic fevers present the same symptoms and, consequently, the same alterations as those which are sporadic ; the same means of treatment are applicable to both ; these are then gastro-enterites, produced by miasmatic poisoning, complicated almost always by another inflammation, and principally by that of the meninges or of the brain. They should not then be distinguished from ordinary gastritis, except when considered in relation to the external causes producing them. Contagious and epidemic fevers, especially those of our climate, do not indeed present any other peculiar characters, besides that of existing under the two following forms, viz : they depend on the existence of

a centre of infection, from whence miasms emanate inflaming with more or less violence the gastro-intestinal mucous membrane, or are transmitted from individual to individual, apart from any place of infection. In the Levant, they are accompanied by gangrenous inflammation of the skin, carbuncles and buboes, which, sometimes also become gangrenous (plague.) In America, and in some warm latitudes of Europe, they are sometimes associated with an inflammation of the liver, jaundice, and obstinate vomiting (yellow fever.) In Europe they are less violent, less fatal, and are complicated, as in the two preceding cases, by encephalic irritation, and frequently by petechial eruptions (typhus.) To prove that all these affections are not accidental modifications of gastro-enteritis, M. Broussais observes that this inflammation may exist in the Levant without buboes or carbuncles; in America, without jaundice or vomiting; that in Europe, it is sometimes associated with buboes and anthrax; that at other times it presents in our climate, during the summer heat, in persons addicted to alcoholic drinks, all the characters of yellow fever; that men whose brains are disposed to irritation from study, fear, griefs, &c. are affected with cerebral irritation as soon as the irritation of the stomach and intestines is manifested; that the typhus fever of Europe is accompanied by violent pulmonary inflammation in winter, by cerebral inflammation in summer, and colitis during the autumn. He also remarks that in Egypt it does not present the characters of plague, except when produced by the emanations of infected marshes, spread by the south winds at certain times; that at other times it puts on its ordinary forms, and is no longer susceptible of reigning epidemically; that in America it is not elevated to the degree of yellow fever, except during the great heats of summer and in humid places; that in Europe we see gastro-enteritis much more violent in places where cleanliness is not attended to, in encumbered houses, and in marshes; that it is only contagious when it results from a place of infection, from whence emanate very active miasms.

Cholera morbus is an extremely acute gastro-enteritis, announced by a severe pain at the epigastrium, extending often to the chest and abdomen; obstinate vomiting of bilious matter, to which ordinarily are joined stools of the same nature, and accompanied by very painful tenesmus; small-

ness and concentration of pulse ; in short, by all the symptoms produced by poisoning from corrosive substances. We see it reign epidemically under the same circumstances as the other forms of gastro-enteritis just examined ; like them it is caused by heat and moisture, by the miasms spread from places of infection ; and like them also, it owes its ravages principally to the stimulants lavished by Brownism, in these diseases, under pretext of remedying the asthenia, to which they are attributed. No account of an epidemic is better calculated to show the nature of cholera morbus, the dangers of stimulants, and the happy effects of antiphlogistics in its treatment, than that comprised in the thesis of M. Gravier, on the epidemic which ravaged India in 1817, and destroyed more than six hundred thousand inhabitants. This physician of course possesses an imposing mass of facts ; enlightened by a knowledge of the physiological doctrine, he has interrogated dead bodies, compared the alterations they have presented to him, with the symptoms observed during life, and has been able to appreciate the terrible effects of the barbarous treatment employed by the obstinate Brunoniens who were around him.

Cholera morbus is endemic in India ; its existence depends on the cold and humidity frequently brought by the north winds, which exercise a powerful influence on the poor inhabitants who are badly lodged, badly nourished, passing the night on damp mats or under open sheds, where the cold is keenly felt, and especially during the rains produced by the north wind. All these causes were re-enforced in 1817 by a great number of troops being brought together in Bengal, for the purpose of combatting several Indian Princes ; this large army was surprised by profound calms and excessive heats, succeeded, during the night, by cold and humidity. "We can conceive," says M. Gravier, "that the disease readily took on the character of an epidemic, and even assumed the appearances of contagion ; for all these causes, joined to the encumbrance resulting from the collection of a great number of individuals, could not fail to develop points of infection in places where men, healthy or sick, were assembled together, and where attentions to cleanliness and measures of public salubrity were necessarily neglected. These circumstances explain the great mortality which desolated Calcutta : this immense city is traversed by narrow streets, the houses are



low, and want openings to establish currents of air—thousands of individuals are buried in these kinds of hovels where the sun never penetrates ; the disease also committed less ravage in places removed from Calcutta. These foci of infection extended their influence to considerable distance ; from the army of Bengal, the disease was carried to that on the coast of Malabar, and from there as far as Madras, and in all the neighboring country. If we observe that it was not transmitted from man to man without the infected area, and that it extended as far as Pondichéry, notwithstanding a very strong wind blowing in a direction contrary to its propagation, we are led to the conclusion, that the epidemic was not contagious, and that the nidus of infection can be transported from one place to another by means of the calamities of war, and thus spread the disease as long as the causes producing it continue to act.

An inexpressible disturbance in the economy and in the intellectual functions marked the invasion of the disease in many individuals ; others were attacked suddenly and always at night. The following is a picture of the symptoms, presented by the greater number, in the order of their development :

Vomiting of a limpid fluid, sometimes mixed with worms and always with whitish mucosities ; alvine dejections without worms, pulse remarkable for smallness ; severe pains in the stomach ; alteration of the features ; eyes haggard and sunk ; agitation ; tongue red over its whole surface ; thirst ; exasperation of the same symptoms soon follows ; cold extremities ; supine position ; violent pains in the stomach and lower belly ; carphologia, cold sweat, pulse almost insensible, tongue dry, spasm and oppression.

Treatment modified remarkably the march of the disease. If the antiphlogistic method was followed, hardly was the first bleeding practiced, before the face of the patient expanded ; previous to this, he did not articulate a word, and he then cried out with an inexpressible accent, *I am saved*. Indeed the tongue became moist ; the vomiting, alvine evacuations and spasms diminished, and sometimes ceased ; the second bleeding produced ordinarily a remission of all the alarming symptoms. The patients experienced generally then a desire to eat, which arose almost to frenzy ; and if their importunities were not yielded to, the symptoms immediately returned with greater intensity ; all succour

became useless, they sank in the midst of the most horrible torments. Such also was the termination which supervened almost constantly where the disease was abandoned to itself, and especially when exasperated by a stimulating treatment. The evacuations became more frequent; all the *ingesta* were then rejected, or even could not be swallowed. The severity of the abdominal pains produced at first an extreme agitation, accompanied by violent convulsions, and drew from the patients the most lamentable cries: but this violent state was soon replaced by prostration, aphonia, delirium, carphologia, coma, cold extremities, and at the same time these unfortunate wretches experienced in the bowels the sensation of burning heat; the pulse always precipitate, became thready, and life was extinguished. This cruel disease was terminated ordinarily in the space of from one to three hours. [Days? Edit.]

In spite of the danger of opening bodies, which, before getting cold, already exhaled an insupportable odour, and whose decomposition was very rapid, M. Gravier has not been deterred from endeavoring to establish, by an examination of the organs, the inflammatory nature of this disease, already sufficiently demonstrated by the symptoms and effects of the antiphlogistic and stimulating treatment. He did not meet with any alteration in the brain or in the organs of the chest; he found the internal membrane of the œsophagus inflamed, the cardiac orifice of a violet red, the mucous membrane of the stomach, in its whole extent, thickened and of a gangrenous brown; once only he found it ulcerated; it was easily separated from the muscular tunic; the patient had resisted during three days. He has seen the latter perforated in an old woman, who had vomited up a number of worms; the duodenum presented the same aspect as the stomach; the redness gradually decreased in the small intestine, but all the traces of inflammation were manifested in the cœcum and colon. The stomach and intestines were empty; the bladder, phlogosed and indurated, resembled a piece of rumpled parchment. In general, the appearances of inflammation were less apparent in the bodies of persons who died suddenly, and who had sunk rather under the pain and intensity of convulsive spasms, than the disorganization of viscera; many English physicians have found invaginations in the small intestine. The liver has not ordinarily presented traces of inflammation.

From all the facts, M. Gravier justly concludes, that the cholera morbus which he has observed consisted in a high irritation of the digestive canal, producing at first, pains by its excess, and often exhausted the forces and sensibility, before having had time to rise to the degree of inflammation; but which took on this character in the most evident manner, when prolonged but for a very short time.

M. Gravier constantly obtained the happiest effects from the antiphlogistic treatment when he was called in time.—At the commencement of the disease, he prescribed rice water with gum and a small quantity of acid, and glysters of the same fluid. These simple means sufficed often to calm the vomiting and stools. If the symptoms became more intense, announcing the progress of inflammation of the digestive mucous membrane, he had recourse to bleeding. It is to be regretted that this physician did not resort to leeches; for local blood-letting would certainly have had more happy effects than phlebotomy. The latter cannot be used in certain cases without danger; for when the irritating agent has produced a great disturbance of the nervous system, when the sensibility is exhausted by the pain, and the forces are concentrated in the irritated viscera, large sanguine depletions are often pernicious; moreover, we know that local blood-letting is much more efficacious than phlebotomy against inflammations of the mucous membranes. At all events, M. Gravier assures us that he has always seen the latter produce excellent effects. He confined his patients the first day to an absolute diet; and as the amelioration was as prompt, he says, as death, and as the appetite was extreme as soon as the symptoms had disappeared, he allowed rice gruel; which most frequently completed the cure. The patients thus treated, were ordinarily convalescent from the second day, and in a state to take nourishment; and on the fourth day they had recovered their health.

M. Gravier, traces a frightful picture of the treatment adopted by the English physicians in this epidemic; it will not be improper to present here an extract of it, for the purpose of showing how far the errors of practitioners may be carried, who have not been enlightened by physiology, and who are still plunged in the obscurity of humoralism, allied to the still more murderous theories of Brownism.

The ultra-marine Brunonians published a manifesto in

which they declared that the most dangerous character and circumstance of the disease, "was the total want of bile and acrid matters in the stomach and intestines, and that the principal end should be to reanimate the languishing vital powers, to re-establish the circulation, to prevent the violent spasmodic condition, to re-establish the action of the stomach and intestines." Consequently they prescribed under the title of preservative, and afterwards as a curative means, a tincture composed of pimento, opium, camphor, and cardamoms infused in alcohol. All the inhabitants were provided with this tincture, decorated with the title of *antispasmodic*, or *vigorous supporter*, and the use which they made of it as a preventative, should be set down amongst the principal causes of the ravages of this epidemic. When the symptoms of this terrible inflammation were manifested, they no longer limited themselves to their tincture; the stimulation it produced was too feeble to satisfy them: "Rub the epigastrium," they add in their manifesto, "with the oil of turpentine, tincture of cantharides, and spirits of camphor. For the purpose of re-establishing the circulation, the action of the stomach and intestines, and for overcoming the spasms, take thirty drops of laudanum in a small quantity of spirit of mint; take then an opiate with fifteen grains of calomel. The same dose may be repeated as many as four times.—It happens that the patient falls into such a state of exhaustion, that the pulse is no longer sensible: for the purpose of re-establishing, if possible, the vital powers, give strong liquors with laudanum, ether, calomel, and bark." Here, as the four quarters of the globe, adds M. Gravier, does not furnish new stimulants to combat the pretended debility, the doses and repetitions of the latter prescriptions are left to the will of the individuals; and, as if the genius of evil had rendered all the physicians deaf to the cries of nature, the counsel of Madras concluded by saying: "One of the most prominent symptoms of the disease is an ardent thirst and great desire for cold water; but *we have decided*, that it is a means of destruction, which would be followed by prompt death; we should not then satisfy this desire."—Should we be surprised that the cholera morbus of India has swept from that country, in a few months, more than six hundred thousand individuals? After what we have seen of the symptoms of the disease and the post mortem appearances, it is indeed easy to foresee what would be the



results of this incendiary treatment; of the application of pepper, pimento, camphor, ether, cardamoms, colomel, brandy, &c. to the mucous membrane of the digestive passages, already affected with an irritation of the highest grade. In spite, however, of the influence of all these stimulants, the patients did not all die; but it was only the small number of those in whom the agents produced revulsions. M. Gravier assures us, that these cures cost dear to those who had the good fortune to escape from the disease and treatment, and that he has *constantly* observed that after those stimulating medications, convalescence was tedious and painful, and that there remained always chronic gastro-enteritis, which kept up a state of inappetency and langour very difficult to overcome. But let us continue the history of acute gastro-enteritis.

The attempt at assigning to each disease a fixed duration is, without doubt, one of the greatest errors of our predecessors. The duration of this inflammation and of all others cannot at all be limited; it varies from two or three days to the most inveterate chronicity. It is not more possible to determine at what time the disease ceases to be acute and becomes chronic. The observation of symptoms alone can make this transition known, since we have agreed at the present day to call inflammations *chronic*, when the local symptoms lose their intensity, and when most of the sympathetic phenomena disappear. Let us for a moment rest our attention on the circumstances which may enable us to foresee the issue of gastro-enteritis.

The prognostic is more unfavorable in proportion as the inflammation is more intense; but it is necessary here to take notice of the condition in which the individual was, before the invasion of the disease. When he has been valitudinary for a long time, our fears of an unfavorable termination should be increased; for this state is most frequently produced by a chronic gastro-enteritis, and experience has proved that when it passes to the acute state, it is always very serious and often fatal. The constitution of the individual also modifies the danger of gastro-enteritis: in those of obtuse sensibility, the sympathetic disorders are much less intense, and the disease consequently less dangerous; on the contrary, in those endowed with great sensibility, the sympathetic irritations are very much multiplied, and often rise to a high degree of intensity, especially in the

encephalon ; we also know the danger of *ataxic fever*.—When the inflammation has existed for a long time, the cure is much more difficult than when it is recent ; when, however, it has not been exasperated by a stimulating treatment, we should still expect a happy issue. High fever reveals an intense inflammation ; but when it is not joined to other serious symptoms, it does not announce great danger. But when from the first the patients are prostrated, the fever high, and pains manifested in some parts of the body, the gastro-enteritis will be very serious. When symptoms of adynamia and ataxia appear, the danger is very great ; when the features alter, the stupor augments, as well as the other cerebral symptoms, we should fear approaching death. Obstinate vomiting announces that the inflammation is very acute in the stomach, and adds to the unfavorableness of the prognostic. Tympanitis is a dangerous symptom ; it leads us to fear peritonitis, and when this supervenes in the course of a gastro-enteritis, it is ordinarily mortal. When to a little pulse, succeeds one larger and stronger ; and when at the same time the other symptoms do not diminish in intensity, we must be cautious in thinking there is amelioration : this developement of the pulse arises from the circumstance, that the lungs are affected ; the danger on the contrary is greater, and the development of pneumonia under these circumstances, like that of peritonitis, is extremely dangerous. But when the pulse becomes less frequent and small, when the skin is less hot and dry, when the forces increase, when the redness and dryness of the tongue diminish, when thirst is no longer felt, when the secretions and excretions are re-established, when the uneasiness or pain, and cerebral symptoms disappear, we should look for approaching convalescence. An epistaxis is ordinarily a fortunate event, if not too abundant. When diarrhœa supervenes, it announces that the inflammation has extended to the large intestine and predominates there. If the frequency of pulse do not diminish, the danger is not less great ; but if it becomes slower, and the other symptoms lose their intensity, diarrhœa is a fortunate omen.—When there is established an external inflammation, coincident with diminution of the symptoms of gastro-enteritis, it is ordinarily critical. A transient delirium, not accompanied by symptoms of bad character should not make us establish an unfavorable prognostic. When on the contrary, it

becomes permanent and coincides with other severe symptoms, it announces the development of encephalitis. All things being equal the prognostic should be more unfavorable in infants and old people, than in adult age. When the cause of gastro-enteritis has acted slowly and during a long time, we have also less chance of cure than when its action has been rapid.

We avoid speaking of the terminations of gastro-enteritis by resolution or death, for the purpose of occupying ourselves at once with a more important subject—its passing to the chronic state.

## ARTICLE II.—PHENOMENA OF CHRONIC GASTRO-ENTERITIS.

When resolution of the inflammation of the gastro-intestinal mucous membrane does take place, and it does not destroy the patient, it passes after some time into the chronic state. The phlogosis then does not destroy completely the digestive functions, it only excites slight sympathetic phenomena; it only produces consequently, in the circulation and other functions, indistinctly marked disturbances, and often indeed it awakens no sympathy. This is the shade of gastro-enteritis which M. Broussais describes under the name of chronic.

The study of this form of gastro-enteritis is not less important than that of the acute, and the knowledge of it, due entirely to the labors of the historian of *chronic inflammations*, has not shed on pathology a less brilliant light than that of the other.

Chronic gastro-enteritis has been the subject of several valuable dissertations, amongst which we will cite principally those of M M. Poutier, Schacken Archambault, and Mérot, from which we shall principally draw the description we are about to give of this disease.

The causes of chronic gastro-enteritis are all those we have assigned to acute gastro-enteritis, only they act with less intensity, or they exercise their influence on individuals less irritable and little disposed to contract acute inflammations. We content ourselves with remarking, that it is observed principally in individuals who present bilious or nervous constitutions, in men of letters, in all those who lead a sedentary life, and who exercise a great deal, at the same time, their intellectual faculties; in those who are

habitually submitted to the influence of a distressing moral affection, who are guilty of frequent excesses of venereal pleasures or of the table ; in individuals retired from a busy life to one of idleness and intemperance ; in those who make daily use of alcoholic drinks ; finally, in almost all individuals who are affected with chronic inflammations in another organ.

Chronic gastro-enteritis may be primitive, or consecutive to an acute gastro-enteritis. In the first case, the causes acting under the circumstances which we have just pointed out produce a slight irritation, which continues for a longer or shorter time, and the symptoms of which are limited to the prodromes of acute gastro-enteritis ; it follows the latter when treated by stimulants, or the antiphlogistic plan too feebly pursued. At other times the continuance of the gastric phlogosis, is the result of imprudences committed by patients or convalescents in the tonic regimen administered during convalescence, under the pretext of restoring the forces. Moreover, in spite of the most methodical treatment, we see this inflammation pass into the chronic state in lymphatic individuals, who have a great aptitude to sub-inflammations : the appetite then returns, but digestion is painful, and the patient experiences uneasiness whilst it is going on ; the forces return, but are not completely re-established ; the fever ceases, but the heat of the skin is increased, and the pulse has a little frequency and hardness after eating. Finally, one or most of the symptoms of the acute state continue in a more light grade.

Chronic gastro-enteritis presents a number of varieties in the development and intensity of its symptoms, in its duration, march and the results which it produces. These circumstances establish as many degrees or shades of this inflammation, each of which have been taken for different diseases. These different shades succeed each other often in the same individual, and it is impossible to submit them to regular divisions, they undergo so many modifications. We will describe then, collectively, all the phenomena of chronic gastro-enteritis, seeing the impossibility of uniting them in groups which would establish the different shades of this disease.

The patients complain of a sense of uneasiness, which they refer principally to the epigastrium. They often feel there a pain more or less severe which extends transversely



from one hypochondrium to the other, and which is ordinarily more intense in the right than the left. Sometimes it is continued, at other times irregularly intermittent; in all cases it is redoubled, ordinarily after eating, and they are more intense in proportion to the quantity of food and stimulating substances taken. Other causes, and particularly grief, exasperate it also, and render it more continued.—We see it, on the contrary, diminish when repasts are light and composed of aliments easily digested, when the patient takes exercise and removes himself from all troubles. This pain, situated at the base of the chest, presents different characters; sometimes it is lancinating, pungent, burning, tearing, sometimes accompanied by a sense of constriction, which extends to the œsophagus (*cardialgia*.) At other times it is a sense of oppression which renders deglutition and respiration distressing, and which the patients compare to the compression produced by a transverse bar, situated at the lower part of the chest. It is sometimes circumscribed and at other times very extended. In certain cases the patient refers it to the chest; and very often they have been led into error with regard to the seat of the disease, especially when it is accompanied by a gastric cough. Its intensity varies very much: we have seen it in several women sufficiently severe to make them shed tears. At other times the patients experience only at the epigastrium an exquisite sensibility, which does not permit them to bear the constriction which their clothes produce on this part of the body. Finally, in many cases the pain is entirely wanting.

One of the most constant signs of chronic gastro-enteritis is anorexia; the patients eat without appetite, and often experience even repugnance for food. Sometimes, on the contrary, they present an extraordinary development of appetite, (*bulimia*), which is soon replaced by disgust.—They digest with difficulty; they are fatigued by eructations ordinarily acid, sometimes nidorous, and in some cases very acrid (*pyrosis*.) We see some who experience at intervals a sort of rumination. The uneasiness then augments; the patients complain of a sense of fullness at the epigastrium; they are thirsty, and when they have drunk several glasses of water whilst digestion is going on, they feel relieved. Very often they experience confusion in the ideas, heaviness of the head, disposition to sleep, and repugnance to movement; at the same time the skin becomes

hot, especially the palms of the hands, and the pulse soft and frequent in many cases. When the irritation of the stomach is more acute, or when the patients have ingested too great a quantity of food, the digestion cannot be completed, or the stomach throws off by vomiting the substances fatiguing it. Under these circumstances, we see most patients make use of tonics, which sometimes develops the appetite, and facilitates digestion; but some hours after, their uneasiness augments; they are forced every day, in order to produce the same results, to augment the dose, and the phlogosis makes progress from day to day—disorganizations supervene, and soon produce the destruction of the patient.

Individuals affected with chronic gastro-enteritis, experience almost always obstinate constipation; they are several days without going to stool, and ordinarily these are only obtained by the aid of several clysters. This constipation is sometimes interrupted by a diarrhœa, lasting for one or several days, and the irritation of the large intestine which produces it does not continue except towards the close of the disease. We see then, an abundant diarrhœa take place, which is calmed indeed by emulsions, opiates and the application of a few leeches to the anus, but soon returns; for ordinarily ulcers exist in the large intestine. Often in infants, and sometimes in adults, the mesenteric ganglions become irritated, swell up, and become the seat of tuberculous degeneration (marasmus.)

Let us now examine the sympathetic phenomena produced by chronic phlogosis of the digestive mucous membrane. Most frequently the tongue is narrow and red on the point and edges; sometimes the redness is not intense, but uniform over the whole surface; at other times it is wanting entirely, and then it is replaced by the small reddish points of which we have before spoken. The middle of the tongue is often covered with a coat of mucus, yellowish or whitish, more abundant in the morning and sometimes dry and resembling a pellicle which is detached in fragments.—The breath is fetid, and the thirst almost always greater than in the healthy state, especially after eating; very great thirst is even sometimes the most prominent symptom of chronic gastritis. Often the patients complain of feeling a sense of heat, of dryness and sourness of the throat.

Gastric cough is more frequently observed in this shade

of gastro-enteritis than in the acute state ; and joined to pain, (which extends in certain cases to the chest) and to emaciation, it has often led to a belief of the existence of phthisis pulmonalis, as we have already remarked. We often observe a disposition to silence, weakness of the voice, and even almost complete aphonia ; the heart is not stimulated in the light grades of chronic gastro-enteritis ; only the circulation undergoes ordinarily after eating some disturbances, which are more marked when the patient has committed an excess, or has been submitted to other causes of irritation. But when the phlogosis progresses, at the same time that its different symptoms become more intense, the heart is stimulated ; and then we observe every evening a febrile movement terminating towards the end of the night, by sweat, and soon becomes remittent or continued : it constitutes one of the principal signs of disorganization, and then the phlogosis takes on again the characters of the acute state ; but when it is only transient, when it only comes on during digestion, and when it is not accompanied by other serious symptoms, the disease may still, according to Broussais, remain in the chronic state. He remarks also, that when it is much prolonged, the febrile movement disappears, and that the heat and elevation of pulse coming on in the evening, cease to be sensible.

The action of the secreting organs is not disturbed as in the acute state. The liver, however, is not unfrequently irritated ; the bile is then secreted in greater quantity, and flows into the stomach ; the mouth is bitter, particularly in the morning ; the face is of a yellowish tint, obscure, and sometimes even we observe all the symptoms of *embarras gastrique*. The liver may contract a chronic inflammation, and it is then, that on opening the dead body we find it adipose, at the same time that the duodenum is brown or black. Sometimes the secretion of urine is disturbed ; it is less abundant and reddish, and in subjects of nervous temperaments who experience sympathetic nervous symptoms, it is, on the contrary, limpid and more abundant. The action of the genital organs is most frequently debilitated ; it is not rare even to see patients affected more or less with impotency.

It rarely happens that the brain is not influenced by chronic phlogosis of the digestive passages ; the irritation it experiences is often sufficiently intense to leave traces observ-

able in the dead body. The patients are almost always sad, down cast, discouraged, taciturn, distrustful and irascible ; they support their misfortune with impatience ; they are easily alarmed with regard to its consequences ; and soon lose the hope of recovering. In nervous subjects, given to mental labors, these phenomena are often more marked ; they exaggerate their sufferings ; they experience hallucinations, errors of judgment, and other disturbances in the mental functions, (*hypochondria*.) Sometimes indeed the brain is so deeply affected, that complete mania supervenes. In all these cases the attention is fixed exclusively on the nervous phenomena ; their source is mistaken, they are regarded as essential and treated by the whole series of antispasmodics, that is to say by stimulants which increase, and finally render incurable the lesion producing them.

What we have said of the sympathetic influence exercised by chronic gastro-enteritis on the heart, applies almost entirely to the skin. We should, however, remark, that the heat is often increased after eating, without the circulatory system being affected ; when the inflammation is not sufficiently intense to arouse the sympathies, the skin is habitually colder than it is ordinarily, and the patients are then much more sensible to cold. The face expresses suffering, wrinkles numerous and profound alter its expression, its color is sometimes pale, and at other times straw color, whilst the cheeks are at other times the color of wine lees. Towards the close of life, similar spots are seen often in great numbers on other points of the skin. This sign announces a rapidly approaching termination.

The muscular system is more or less debilitated always, especially in the advanced stage of the disease ; the patients then have great repugnance to exercise, and are fatigued, no matter how little they take. The different articulations are sometimes affected with pains of greater or less acuteness, which fix the attention of the patient and physician, more than the affection of the digestive passages. Often the volume of the muscles is little diminished, except towards the close of the disease when they are almost always emaciated ; the subcutaneous and intermuscular cellular tissue sinks down and contracts, on the contrary, from the commencement of the disease ; the skin then becomes very adherent to the bones and muscles ; it sinks into their interstices and can no longer be displaced at the points where it



should possess the greatest laxity. This phenomenon, says the author of the *phlegmasies chroniques*, is peculiar to the marasmus produced by gastro-enteritis ; and joined to an obscure red color of the skin like that of ochre or lees of wine, constitutes, according to him, one of the most constant signs of this disease.

Such are the signs of chronic gastro-enteritis ; but we do not see them all united in the same patient. We observe in this respect the most multiplied differences in different individuals, and in the same subject according to the intensity of the inflammation, the remedies made use of, the kind of life, the regimen, constitution, &c. Sometimes we only observe one of these symptoms ; at other times we see several of them united together. There are individuals in whom the disease is announced only by slight uneasiness after eating, little appetite and constipation : in others we only see a remarkable thirst after eating. But after an impropriety in diet, pain in the epigastrium and redness of the tongue, appear, and subside after a few hours employment of emollients ; besides, however transient and faintly marked may be the symptoms of chronic gastritis, they are always sufficient to reveal it to the physiological physician, and inexperience, prejudice, or want of attention only cause it to be mistaken when it exists.

Before examining the tendency and terminations of chronic gastro-enteritis, we should, for a moment, fix our attention on several symptoms of this inflammation which have been erected into diseases, considered mostly as neuroses, and treated by the greater number of physicians, with tonics and stimulants. When we consider the causes producing these pretended neuroses and debilities of the stomach, the phenomena with which they are accompanied, and the effects of the different means of treatment opposed to them, it is impossible not to attribute them, in almost all cases with Broussais, to chronic gastro-enteritis.

Amongst the symptoms of this affection, of which they have made distinct diseases, the most frequent, that which is common to almost all the shades of gastro-enteritis, is dyspepsia or *difficult digestion*. We meet every day persons who complain of having painful digestion, and every day we see a great number of practitioners, (who recognize debility of the stomach, and never its irritation,) advise in all these cases tonics of all kinds, without know-

ing the nature of the evil they wish to combat. M. Mérot in his dissertation on dyspepsia, has proved very satisfactorily that this morbid phenomenon was almost always produced by irritation of the stomach. If we pay attention to the intemperance of the greater number of men, to the abuse of alcoholic liquors, coffee, spices, &c. ; if we consider that the sufferings of all the organs is reflected to the stomach ; lastly, if we regard the treatment of the greater number of diseases, which to the present time has consisted in the administration of tonics and the most active excitants, we shall be little surprised to meet in society a crowd of individuals, who, as M. Broussais says, pass their lives in listening to their stomach digest, and who carry thus for a longer or shorter time, the germ of lesions too often irremediable. In pointing out the most frequent causes of dyspepsia, M. Mérot insists very justly on the prodigious abuse of irritants in almost all diseases ; for, as he has remarked, it is one of those whose consequences have been the most fatal to humanity. Setting out always with the idea of debility, to which physicians have heretofore attributed all the disturbances observed in the digestive functions, they ingested into the stomach, with a blind confidence, the most energetic substances, the most incendiary medicines which the three kingdoms can furnish ; they seemed to consider the digestive canal as an inert tube, in which all stimulants could be placed with impunity.

If we examine the causes under whose influence the action of the gastric mucous membrane may be sufficiently diminished to produce dyspepsia, we shall see that this affection can only depend on debility, under very rare circumstances. Asthenia of the stomach may be produced by abundant hemorrhages, not accompanied by a chronic gastritis. It is not proper to place, as many authors have done, by the side of hemorrhages, the causes of debility, repeated seminal evacuations, and abundant suppurations ; for the forced exercise of the genital organs, infallibly produces irritation of the stomach, and large wounds furnishing pus abundantly, are always accompanied by it. Humid cold, severe long continued diet, joined to the use of mucilages, may also throw the stomach into a state of asthenia ; we have observed several examples of this, but we see no other causes which can produce this effect. We will not place amongst them a gross diet of unsubstantial ali-

ments; for although they agree well with those who make daily use of them, they irritate the stomach of persons habituated to more delicate food. A state of debility of the gastric-mucous membrane is then very rare; for besides that the causes producing it are not many, they will not produce it in all individuals. Now let us remark that it is impossible for this state to continue during a long time; for the digestion only going on tediously and difficultly, the aliments, by remaining long in the stomach, fatigue its mucous membrane; affect it disagreeably, and finally irritate it so highly that this viscus unloads itself often by vomiting. Let us add that all men do not fail, under these circumstances, to take stimulants, such as wine, coffee, brandy, high flavored food, unless they be in a situation where they cannot procure them. It is then evident that, from the fact that it is of long standing, dyspepsia depends on irritation of the stomach.

At all events, the phenomena accompanying dyspepsia are different in the two cases, and permits us very easily to ascertain the state of the stomach which gives rise to it.—When it is produced by debility of the stomach, the face is pale, the eyes languishing, but the conjunctiva is not red; the tongue is pale and at the same time broad; this paleness extends to its edges and point; the patient desires stimulants, and does not experience thirst even during digestion; the latter is accompanied by weight at the stomach, but we do not observe heat of skin or elevation of pulse; the head is not heavy, &c. If the patient make use of generous wine, coffee, spiced food, digestion goes on easily; he experiences a sensation of comfort (*de bien être*,) continuing after it is accomplished. In short, these means, joined to a bitter infusion, to the extract of rhubarb or bark, suffice to make the dyspepsia disappear in a day or two. All these phenomena are entirely opposed to those which accompany dyspepsia, produced by irritation of the stomach, and the description we have given of the signs of chronic gastritis, supercedes the necessity of relating them here. But if we examine a great number of dyspeptics, we will see that they present all these latter symptoms, and that the cases where the difficulty of digestion depends on debility of the stomach, are indeed only exceptions.

In vain physicians who treat dyspepsia always by tonics, set up in opposition the cures they have obtained; we will

answer with M. Mérot that if they are honest they will acknowledge that they have not only failed to cure many of the patients to whom they have administered these remedies, but that the greater number have remained a long time languishing on their hands, and that their stimulants have conducted to the tomb, after a longer or shorter time, a great number of them, affected with *cancer of the stomach, obstructions, dropsies, or real consumption*. The small number of cures they have effected, prove nothing, because they have had to deal with dyspepsias which were really caused by debility, and because we may cure slight irritations by stimulants. It is thus that we dissipate incipient or chronic opthalmia by aromatic lotions and other *resolvents*; a slight inflammation of the skin by *repercussives*; urethritis by vinous injections; chronic dysentery by bark and other tonics, &c. Whatever may be the explanation given of these facts, they are demonstrated—they exist; we can conceive then that excitants may produce the same results in some cases of acute or chronic gastritis, of little intensity. Lastly, the physiological physicians cure dyspepsias with great success by a severe calming regimen, mucilaginous drinks, &c. and they only find difficulty when the affection is inveterate, when the patients are unruly, or when they are submitted to permanent causes of irritation; and, as M. Mérot has remarked, if we admit that the disturbance of digestion is always caused by debility of the gastric organs, how can we explain the cures obtained by antiphlogistics, which far from dissipating them, should on the contrary augment them? If they retort the argument, and object that the same difficulty presents itself against the cures performed by tonics, it is easy to answer that it is acknowledged that these last dissipate inflammations sometimes, whereas it can never be proved that emollients and diet have ever cured debility of the stomach.

They often ask, if in persons of a lymphatic temperament, of delicate constitution, convalescents exhausted by a protracted disease, old people whose vital action is worn out, dyspepsia is not rather the result of asthenia than of irritation, and if we can suppose its existence in individuals submitted to the most regular kind of life, who have never committed any kind of excess.

It is never, we have often repeated, from the exterior appearance of strength or weakness, that we must judge of



the nature of the disease an individual is laboring under, but always by the scrupulous examination of symptoms and morbid causes, when we can appreciate them.—The most debilitated lymphatic subject, who shall be submitted to a stimulating influence, will contract, as well as any other, inflammation; it is the same with old men; and the vital action being languishing in the one and the other, a chronic phlogosis will be established rather than an acute inflammation. In convalescents there exists great susceptibility in the viscera lately inflamed, and sometimes even they still bear a point of irritation. Besides, when practitioners will consent to renounce the fallacious method of judging of the condition of the viscera from that of the face, of the muscles and subcutaneous cellular tissue, when they will confine themselves to the interrogation of the suffering organs, they will always discover whether, in these cases, the dyspepsia is a symptom of debility, or irritation of the stomach, and the first effects of the treatment they shall adopt, will soon confirm or destroy, in the eyes of the observer, (who is attentive and untrammelled by pre-conceived ideas,) the judgment he may have formed.

In persons leading the most regular kind of life, dyspepsia may, in the same manner, be produced by irritation of the stomach as in other individuals—since we often see them contract mortal inflammations. Constantly exposed to a thousand causes of irritation producing on us different impressions, can we always appreciate their effects, especially if we consider the difference of constitutions, and the various modifications which the sensibility undergoes, not only in each individual, but also in each particular organ; so that such a cause determining inflammation in one subject would not produce it in another, and such an influence which would not be followed by any result, might, a few days afterwards, be very injurious to the same individual?

They object, also, that we exaggerate the effects of spirituous liquors, of acrid and spicy food, because habit blunts the susceptibility; and they add that, in individuals who have long made use of these substances, we should rather attribute dyspepsia to this, that these excitants, to which the stomach is habituated, is no longer sufficient to determine in this organ the degree of excitement necessary to the accomplishment of digestion; and they then advise more powerful stimulants.

Habit, without doubt, produces some modifications in the vitality of the stomach, enfeebles and even sometimes destroys the danger which should result from the continual contact of stimulants of the most active kind with the gastric mucous membrane. An impropriety in regimen will have different consequences in a woman habituated to a sober regimen, and in a professed brandy drinker ; but it would be erroneous to conclude from this fact, that the empire of habit over the stomach is unlimited ; for it would result that every kind of life is of itself indifferent, and that it matters little whether we use the most powerful stimulants, provided we are habituated to them gradually ; this is what no one, no matter how limited his pretensions to physiology may be, would dare to sustain. If to some men custom renders less injurious, substances hurtful to others, numerous facts present themselves to prove that the former always contract finally an acute or chronic gastro-enteritis, which causes the death of the greater number. The digestive force of husbandmen, who only use the most simple food and water, surpasses very far that of the inhabitants of cities, who habitually use high seasoned food, spirituous drinks, &c. Gastric affections, so common amongst the latter, are almost unknown to the former. If the absence of excitants, under whose influence the stomach is accustomed to act, observes M. Mérot, may produce indigestion by depriving this viscus of the degree of vital action necessary to the elaboration of aliments, it would be absurd to contend that the prolonged use of irritating substances would produce the same effect. Analogy is opposed to the admission of such a hypothesis ; for if a stimulant placed habitually in contact with the mucous membrane of the stomach should finally exhaust its sensibility so far that this organ could no longer fulfil its functions, because it would no longer be sufficiently excited, how comes it that we see a number of old men, (particularly amongst those who have been sober,) digest perfectly the same aliments which have nourished them for sixty years, although they be little stimulating ; whilst young persons, who make daily use of spirituous and other excitants, are affected with dyspepsia, and lose at an early age the power of digesting ? If in them the abuse of stimulants has blunted the sensibility of the stomach, why does that of the old man, which is stimulated for a much longer time, continue to act in a regular manner under the influence of

the same excitants, and how is it that the latter is not obliged to take rum alone for drink?

Besides, it would be curious to know how the Brunonians would explain the production of weakness by stimulants, without invoking the arbitrary and absurd principle of their *indirect debility*?

To resume, dyspepsia is almost always a symptom of chronic gastritis, and in very rare cases, of debility of the stomach, because men desire stimulants which sharpen the appetite and render the enjoyments of the table more exquisite. Dyspepsia produced by debility does not last, and all the difficulty of digestion, which continues for a long time, is symptomatic of chronic gastritis. The latter exists in the most debilitated subjects, as in those who present the exterior of strength; the abuse of stimulants always produces finally gastro-intestinal inflammation, often incurable.—Notwithstanding a few cures of dyspepsia obtained by tonics, it should be treated by antiphlogistics, except in the cases we have pointed out, because the question will not admit of a dispute, whether stimulants cure more inflammations than debilitants.

What we have just said of dyspepsia, applies to cardialgia, gastro-dynia and pyrosis; indeed, since these affections are always accompanied by the first, and the latter are the result of chronic gastritis, they depend then also on irritation of the stomach; there is only this difference to establish—that these pretended neuroses can never, like dyspepsia, be produced by asthenia of the stomach, because where pain exists there is always irritation, and never debility.

It is the same with bulimia: its causes, phenomena, and treatment prove, that it is also a symptom of irritation of the stomach. It is produced, authors say, by the abuse of bitters, acids, intestinal worms, and drastic purgatives; they have seen it, they say, in infants affected with marasmus, in the course of certain quartan fevers, during the convalescence of many fevers, &c. Individuals affected with bulimia, rarely retain the great quantity of food they have taken into the stomach—very often it is vomited, and in other cases there is diarrhœa. We know that they are oppressed after eating, that they experience then all the signs of chronic gastritis, and that after a time, the bulimia gives place to dyspepsia. Finally, most authors agree in

regarding diet, emulsions and mucilages as the most efficacious treatment of this affection.

Hypochondria is also a group of symptoms produced by chronic gastro-enteritis, and whatever may have been said in favor of its idiopathic nature, no one can help discovering that all its phenomena have their source in the digestive passages. If we examine what are the causes of hypochondria, pointed out by authors, we shall see that they are all those which exercise on the stomach an irritating influence; such are, a sumptuous table, the abuse of irritating aliments, alcoholic drinks, bitters, purgatives, venereal indulgences, onanism, suppression of a habitual hemorrhage, a cutaneous irritation, renal calculi, intestinal worms, intermittent fevers, the change from an active to an indolent life, immoderate exercise of the mind, culture of the fine arts, reverses of fortune, unhappy love, the torments of envy, ambition, &c.; lastly, we see dyspepsia ranged by many authors amongst the causes of hypochondria.

What are the most prominent phenomena of hypochondria? The disturbance of the digestive functions—those of the nervous system; that of the first precedes always the alteration of the second. It is when for several months the patients experience pains in the epigastrium, anorexia, thirst, heat of the skin, constipation, uneasiness after eating, that we see supervene errors of judgment, hallucinations, spasms, convulsions, in short, the symptoms of cerebral irritation, produced and kept up by that of the digestive organs. Let us add also that on opening the bodies of hypochondriacs, we often find scirrhus of the stomach and intestines, disorganizations of the liver, spleen, kidneys, &c.—and always the mucous membrane of the stomach and intestine red or brown in the greater part of its extent. The causes, symptoms and post mortem appearances unite to prove that hypochondria appertains to chronic gastro-enteritis, and to require the substitution of an antiphlogistic treatment in the place of the catalogue of tonics, stimulants, mineral waters, &c. with which hypochondriacs are gorged, and which bring on disorganizations, under which they sink.

The duration of chronic gastritis is as unlimited as that of its acute state; treated methodically from its commencement, it is almost always cured in a short time, but the patients very often retain a great aptitude to relapses. When it is primitive, its cure is ordinarily more easy than when it suc-



ceeds acute gastro-enteritis ; when it continues for several months, and still more, when for several years, the most regular treatment does not, in many cases, succeed in preventing disorganizations ; and the obstinate resistance of inveterate gastro-enteritis, to the best directed attentions, should make us consider it as one of the most dreadful of diseases. When it has been for some time exasperated by stimulants, the cure offers still greater difficulties, and it produces often the death of the patient ; we should, however, under the most serious circumstances, (unless we have collected evident signs of disorganization,) hope for success and do every thing to obtain it ; for we see gastro-enteritis cured, after several years duration, which had brought the patient into the most advanced stage of marasmus.

The march of this inflammation undergoes as many changes as its symptoms. It presents ordinarily alternate ameliorations and exacerbations, according to the treatment and the different sedative or exciting influences to which it is submitted. We often, after using a soothing regimen for some time, see most of the symptoms disappear ; sometimes even, none of them remain ; but the return of the convalescent to his habits, an impropriety in diet, a distressing moral affection, soon bring on again anorexia, thirst, and sensibility of the epigastrium. After a number of these successive exacerbations, and particularly under the influence of the stimulants so profusely administered by most physicians in this disease, the inflammation rises to a more elevated degree, disorganizations supervene, and then we see the alarming symptoms already pointed out ; the frequency of the vomiting, the straw colored tinge of the skin, the obscure red spots, the marasmus, the continued fever, the sweats, the marked alteration of the physiognomy, acquire every day more intensity, announce an approaching and almost inevitable death ; the phlogosis extends to the large intestine ; an unconquerable diarrhœa joined to the preceding symptoms hastens the progress of the marasmus and completes the exhaustion of the forces ; delirium does not supervene ordinarily until the two or three last days of existence. Not unfrequently the unhappy effects of chronic gastro-enteritis are anticipated by its passing to the acute state. Indeed, acute inflammation of the digestive passages, succeeding also to their chronic inflammation, is always very

serious and often mortal ; so that most individuals who sink under this disease, present with the traces of acute inflammation, those of chronic gastro-enteritis.

The phenomena accompanying the last period of this affection are modified by the nature of the alterations which it has produced in the digestive canal, and especially by scirrhus and the perforation of a point of its parietes.

Cancer of the stomach is not an unfrequent termination of chronic gastro-enteritis ; it is announced by all the signs of this disease, by the straw color of the face, by the lancinating pains in the epigastrium, ordinarily by the development of a hard tumour in this region and almost always by vomiting. These particular symptoms vary according to the seat occupied by the scirrhus thickening : when it affects the cardiac orifice, which is rare, the patient feels below the region of the heart, at other times in the back or pharynx, a fixed pain which is increased by the passing of food ; sometimes the cardia is so constricted, that the food cannot pass, and mounts again to the mouth ; when it penetrates into the stomach, it is often rejected by vomiting, without having undergone any alteration.

When the scirrhus occupies the body of the stomach, it is ordinarily at one of the curvatures, particularly at the small one, that it is seated. The patient takes but little food and drink at a time, because the distension of the stomach they produce, makes him experience intolerable pains and nausea. They are almost always vomited a short time after taken in. Tumour at the epigastrium is not always seen ; it is more frequent when the cancer occupies the *bas-fond* of the stomach ; it extends then from the epigastric to the left hypochondriac region. When the disorganization affects the whole body of the stomach, it appears that there is not vomiting, as we see in the case reported by M. Bourdon, which has furnished to this judicious physiologist, the subject of his beautiful dissertation on vomiting.

The pylorus is the part of the stomach most frequently affected with cancer. The patient experiences pains in the epigastrium, ordinarily lancinating, increased by pressure, which extend to the right hypochondrium, so that they may be referred to the liver.

There exists generally a hard and resisting tumour between the epigastrium, and right hypochondrium, near the anterior border of the liver. Two or three hours after

eating, the aliments are rejected by vomiting, about the time that they should pass the pyloric orifice, and only a very small portion of them pass into the duodenum. The pylorus contracting more and more, the stomach becomes distended by the aliments; M. Broussais, under these circumstances, has seen it acquire a very great capacity.—When the scirrhus ulcerates, the matter which it furnishes always renders that vomited, black, grumous, and sanguinolent.

The existence of scirrhus of the intestine is not manifested by any particular symptom, we content ourselves with pointing it out amongst the terminations of chronic gastro-enteritis. We will not stop to prove that cancer of the intestinal canal and marasmus are the results of chronic inflammation; we have sufficiently shown the etiology of tubercles and of scirrhi in the history of sub-inflammations.

Before terminating the history of the phenomena of gastro-enteritis, we should offer some reflections on one of its most terrible results, viz: perforation of the stomach and intestines. It is to the physiological doctrine that we also owe our knowledge of its mode of production. Often attributed to the action of corrosive poisons, when it comes on suddenly, this lesion has been a subject of deplorable errors previous to the researches of the able professor Chaussier, to whom pathology, and particularly legal medicine, owe the honor of having proved that the perforations of the stomach are spontaneous, and of having laid before us a great number of examples of this kind. Before this John Hunter had attributed them to the dissolving power of the gastric juice; and when M. Chaussier called the attention of the profession to this disorganization, physicians explained it by a morbid erosive action, (which explains nothing:) others by a peculiar mode of inflammation, as if ulceration of the skin and inflamed mucous membranes, the separation of the former, from subjacent parts, the destruction of the cellular tissue, the *dissection* of the muscles in phlegmon, were not sufficient to make us class these alterations with those which occupy us, and refer them to the same cause; but it seems that physicians were destined to exhaust all the errors of physiology and pathology before arriving at a knowledge of the diseases of the stomach and intestines. And lastly, others not finding this *peculiar mode* of inflammation sufficient to explain these perforations, have thought the difficul-

ty could be resolved by making an alliance of humorism and solidism. They have admitted, therefore, that this *specific inflammation* determined the secretion of a fluid which had the property of corroding the tissues. M. Laisné, in an able dissertation, valuable not on account of the doctrine which it contains, but on account of the facts, the greater number of which have been communicated to him by professor Chaussier, says that it is possible, and that it *happens* indeed frequently, that the juices of the part then acquire consecutively a dissolving faculty. We regret that Doct. Desruelles, in his dissertation on the same subject, when endeavoring to attach the theory of perforations to the physiological doctrine, should have wandered so far as to adopt this opinion, and to admit *a deleterious secretion* in the inflamed tissue, when the erosion does not take place rapidly, the existence of which nothing goes to prove.

Considering the causes producing them, and the symptoms which accompany them, M. Broussais has referred perforations of the stomach to gastritis; but it still remained to explain how the inflammation produced them. M. Lallemand has at length cleared up this point to pathological physiology.

His valuable researches on the *ramollissement* of the brain and other alterations of this viscus, have conducted him to the fact, that inflammation, by augmenting the density of the tissues, destroyed their force of cohesion, produced their *ramollissement*, and that then they fall into a state of dissolution (*détritus*) and disappear. He has proved that it was in this manner, ulceration of the skin and mucous membranes, destruction of the cellular tissue, wasting and perforation of the skin in phlegmon, were produced; the section of arteries embraced by a ligature, and that of the parts included by a lead ligature in the operation for fistula in ano; the long track pursued sometimes by balls buried beneath the skin or between the muscles, foreign bodies introduced into the digestive passages; the perforation of the bladder by sounds remaining for a long time in its cavity; the *ramollissement gélatiniforme*, erosion of the mucous membrane, and the complete perforation of the stomach, are different degrees of the same alteration.

With these data on *ramollissement* determined by inflammation, it is easy for us to prove that perforations of the stomach are always determined by inflammation of the



stomach, which differs in nothing from all others. We establish first as a principle, that almost always, the individuals in whom perforations of this viscus have been observed, were affected for a longer or shorter time, with chronic gastritis. It is easy to be convinced of this by reading the cases published on this lesion—it will not be out of place to relate a few of them here.

Gérard reports that a man of forty years, sickly for some time, felt all at once, after having drunk a glass of wine, a pricking in the stomach, and vomited blood in pretty considerable quantity. During three months he experienced severe pains in the head and stomach alternately. At the end of this time the patient took a purge; and the same day, after having taken a little food, he had nausea and vomited bile, with a large clot of blood. The pains then augmented: an œdematous swelling occupied all the left hypochondrium; and after four days the patient died suddenly in the night. On opening the body a large perforation about an inch from the cardia was found, on the side of the great curvature.

In the following cases, taken from the dissertation of M. Laisné, gastritis is not less evident.

A small girl of five years became sickly, and languishing for three weeks. *Suffering slightly in the stomach and belly*, she was suspected to have worms; convulsions came on suddenly and the child died. On post mortem examination, an opening of three inches was found at the splenic extremity of the stomach.

A woman eighteen years old, had never menstruated; several months before she had had a *quartan fever*, and her spleen was habitually enlarged; suddenly she felt in the shoulder a pain so acute, that she could not move; fever was developed, the pain extended to the hypochondric regions, and especially to the left side; there was vomiting from time to time, the belly swelled considerably, and the third day death took place. On opening the body, a perforation was found towards the middle of the stomach.

A single lady of thirty years, in the habit of *lacing very tightly the lower part of the chest*, for the purpose of rendering her form more graceful, experienced, *after some irregularity of diet*, a suppression of the catamenia, and in consequence of this a dropsy. She died suddenly, and on examination a perforation was found in the part of the stomach corresponding to the spleen.

M. Desruelles relates, from Geoffroy, that a lady aged forty years, who suffered during three years, very severe pains eight in the epigastric region, and vomited frequently, died hours after eating dinner. A perforation was found near the cardia.

Perforations of the stomach have often been seen, after *adynamic* or *ataxic fevers*, that is to say, after acute gastro-enteritis. But in all the cases which are reported, and which details have been given of, on the condition of the patient before the invasion of the fever, we see also all the signs of chronic gastro-enteritis, which has afterwards passed to the acute state. In the space of two months, I have seen at the hospital of the Royal Guard, three perforations of the stomach, in individuals who had died in a few days, of gastro-enteritis, under the adynamic form, and the information received from them at the time of their entry, satisfied me that they had been for some time affected with chronic gastro-enteritis. The mucous membrane had probably then been softened by the latter, as we often see it in those who have sunk under this disease, and the disorganization was then extended rapidly to the other coats, when a more acute inflammation supervened. In those cases in which we have no information with regard to the previous state of the health of the patients, we can form no conclusion either in favor or against the pre-existence of chronic gastritis. Boisseau, however, says he has seen perforations in subjects who had always enjoyed good health. However this may be, the patients who are the subjects of these cases have not expired until after five, six or eight days of sickness and sometimes even later; and there is not required more time for a phlegmonous inflammation, to destroy the cellular tissue, to attenuate, soften and perforate the skin; or for an acute enteritis, to produce ulcerations in the intestines. M. Chausier reports several cases of perforations supervening in women affected with puerperal peritonitis. But this inflammation cannot exist without giving rise to concomitant acute gastritis; we would have seen its symptoms if the history of the diseases had been published in detail. In the only case in which M. Laisné has not omitted these details, we see all the signs of this inflammation. A woman of delicate constitution was happily delivered of her first child at the hospital *de la Maternité*. The second day, fever and pains in the hypogastric region—(purgative mixture.) The third

day, the chill reappears ; *tongue red and dry* ; pains supervene in the left hypochondrium ; no secretion of milk.— (Thirty leeches applied, which procure great relief.) On the fourth day however, the symptoms reappear ; heat and dryness of the skin, hardness and frequency of pulse, pains in the whole abdomen ; lochia scanty. The application of leeches repeated, which still procure relief. Meanwhile pains are constantly felt in the abdomen ; the pulse preserves its hardness and frequency ; the skin, its heat and dryness ; *the tongue, its redness and aridity*. The fifth day twelve more leeches are applied and two blisters, one on the sternum and the other on the internal part of the thigh ; these remedies did not suspend the intensity of the symptoms. Ten days passed in alternations of pains and calms ; but on the sixteenth day the abdominal pains returned with intensity ; they were attended by the former symptoms, to which were joined frequent nausea and *a very severe pain in the epigastrium*. Three days passed in this manner and the patient sank. On opening the body traces of peritonitis were found, and towards the left part of the diaphragmatic portion of the stomach, a large opening two inches long ; the corresponding portion of the diaphragm was greyish and softened.

Finally, perforations of the stomach have been seen supervening within a few hours, in persons apparently in good health : but, notwithstanding this assertion, we see also, in several of those cases reported to this point, signs of gastritis pre-existing for a greater or less time. A soldier returned after several days of absence and entered the *Val-de-Grâce*, affected with a phlegmon in the right buttock, to which was joined signs of gastritis of moderate intensity ; three grains of tartar emetic were administered ; frequent and violent vomiting followed. A short time after, the tongue was red and dry, the skin cold, the pulse exhausted, and the patient speechless. When the epigastrium was pressed, his physiognomy presented the expression of acute pain. He died in the night thirty six hours after his entry into the hospital. On opening the body we saw a large perforation which occupied the *bas-fond* of the stomach, and more than half of its posterior face. The serous membrane alone existed, but this gave way at the moment when this viscus was raised up for the purpose of examination. In the remainder of its extent the mucous membrane was black, and showed some

traces of deep red ; on wiping it with a cloth, it was detached in fragments. One would have thought that these disorders had come on suddenly, if the patient had not made known, at the time of his entry, that during the latter part of his residence with his family, he had been guilty of great excesses at table, that he had continued them during his journey, and that on his arrival at his corps, having lost his appetite for several days, he had taken large quantities of brandy and hot wine to restore it.

A young man aged thirty years, who for some time had been troubled with *flatulency and other symptoms of this nature*, was found dead in his bed. His body was examined juridically three days afterwards : the intestines appeared inflamed and the stomach also ; besides, there was a perforation at the *bas-fond* of this viscus.

In the cases, where the signs by which gastritis manifests itself have been neither observed nor mentioned, it perhaps existed notwithstanding ; for we not unfrequently see individuals present the appearance of health, although they be affected for a considerable time with gastric inflammation ; those who have studied attentively this disease, have had occasion to be assured of it. Besides it is not always possible for the physician to collect the facts with regard to the previous state of the patient ; and if he present the external characters of health, he may easily be led into error in this respect. M. Laisné reports as an example of perforation supervening suddenly, a case which will furnish proof of what we here advance.

A woman of the neighborhood of Montargis, after having walked two leagues in the hottest part of a summer day, complained of uneasiness and pain in the head. In the evening she supped, eat some pease and drank wine and water ; she passed the night without complaint. The next day she rose at an early hour ; but soon after she complained of great cold, pains over the whole body, but especially in the stomach ; her eyes were red and strength gone ; she experienced great thirst and had several alvine evacuations accompanied with pains. She expired in the night. On opening the body the stomach was found phlogosed, on the internal surface from the cardia to the great *cul-de-sac*, and its posterior face perforated for a third of its extent.

From these details we would think that this woman enjoyed very good health before the event. But her death



gave rise to suspicions of poisoning ; two individuals were put on trial, and a consultation of the faculty of medicine decided that the disorganization was spontaneous. M. Billiard, who has also reported this case in his thesis, says that a witness attested before the court of assizes, that three days before the ostensible invasion of the disease, the woman who was the subject of the case, on taking food before him, complained of a want of appetite, desire to vomit, and that she actually had some vomiting. We then also find proof here that gastritis had existed for several days.

Nevertheless, M. Chaussier says, that sometimes perforations form suddenly, in a few hours, in *healthy persons*. Most frequently, he adds, it is after several days of sickness. But these facts are far from proving that the disorganization is not the result of gastritis ; we see on the contrary, in these cases the signs of a violent inflammation of the stomach : the patient complains of an acute pain in the epigastric region ; soon he becomes prostrated, the pulse is small and compressed, and the skin cold ; finally, the inflammation is so intense from its commencement, and death supervenes so rapidly, that reaction cannot take place.—We see also in most cases of this kind, that the disease has been caused by powerful irritants—for example, by drinking ice water whilst the individuals were very hot. If a chronic inflammation take a great deal of time to soften and perforate the tissue ; if an acute inflammation of ordinary intensity, produce this disorganization in a few days, we may justly conclude that a very intense inflammation, extending to all the tunics at once, may give rise to it in twelve or fifteen hours. Perhaps also there are some cases of rapid perforation of the stomach which not appertaining to *ramollissement*, are referable to *gangrene* of the stomach, on which we do not yet possess sufficient exact data to be able to establish any thing else than a presumption. Besides the rareness of perforations of the stomach, produced in a few hours in a healthy man, would be in accordance with that of gangrene of the stomach itself. Further, perforations of the stomach are almost always produced by a chronic gastritis which softens its membranes. In cases where we observe it after an acute gastritis, the latter most frequently has been preceded by chronic phlogosis. When the symptoms of perforation come on suddenly, sometimes it is the

result of an obscure inflammation which has not been perceived; at other times, of a very acute inflammation not promptly softening the tissues, or perhaps gangrene. In fine, there are also perforations resulting from scirrhus of the stomach.

### ARTICLE III.—PHENOMENA OF ACUTE AND CHRONIC COLITIS.

M. Broussais describes under this name the inflammation of the mucous membrane of the large intestine, to which he refers diarrhœa and dysentery, two different degrees of it.

This inflammation may be produced by all those causes we have assigned to gastro-enteritis; it is, however, more particularly produced by aliments of difficult digestion, by those which leave a great deal of excrementitious residue, and those which have undergone some alteration; by the use of stagnant waters, charged with organic substances, in a state of decomposition; unripe fruit, eaten in excess; by exhalations from putrifying animal or vegetable substances; those which are disengaged from large crowds of individuals, well or sick. We have often seen persons affected with diarrhœa, after being present at the opening of infected bodies. The fact related by Pringle, is well known, of a man who contracted a dysentery on account of having smelled a bottle containing some putrified blood. Baron Desgenettes has seen a great number of persons affected with this disease, after having been struck by the infected odour, exhaled from the putrified skin of an enormous stag which was carried through the streets of Cairo.

Hot and humid air favors singularly the action of putrid emanations, doubtless by becoming charged with these principles in larger quantity, than that which is dry and cold: it is also almost always under its influence that epidemics of dysentery have been seen to develop themselves in besieged cities, camps, barracks, prisons, and hospitals. These causes sometimes act with the greatest energy, and then most of the individuals who remain for some time in the area of infection, are affected with dysentery. These circumstances have often imposed on those who have not established, between contagion and infection, the difference existing between these two modes of production of diseases. Many distinguished physicians have admitted the contagious nature of dysentery; but at the present day it is well known that it cannot be transmitted without the district of infec-

tion by a sick to a well individual, and that consequently it is not contagious: this character cannot be attributed to it, except when it is united to contagious typhus, as we see it in certain epidemics.

The action of the miasms emanating from a place of infection where dysentery is developed, is not always confined to the large intestine,—we see it often, in the epidemics of this disease, extend to the stomach and small intestine, as the author of the *Phlegmasies chroniques* remarks; sometimes it is even confined to the upper part of the digestive canal, and the large intestine is exempt from inflammation. It is to this co-existence of inflammation of the latter, of the stomach and small intestine, that we must refer what authors have said of the complication of dysentery with *adynamic and ataxic fevers*.

Cold, damp air, unless its temperature be some degrees above *zero*, does not seem to second the action of miasms, but it often produces also, inflammation of the colon, by suppressing cutaneous perspiration. We know that exposure of the feet to cold, is often sufficient to produce diarrhœa. We have seen epidemics of dysentery developed in regiments which had been exposed to rain during several hours in cold weather.

M. Broussais has remarked that debilitated individuals and those who at the same time were very irritable, were most disposed to dysentery, and amongst whom it made the greatest ravages in epidemics. In this respect, the depressing moral affections, and particularly nostalgia, produce a very marked predisposition to inflammation of the colon. We know that strong emotions sometimes give rise suddenly to diarrhœa. Acute and especially chronic phlegmasiæ, and wounds suppurating for a long time, by debilitating individuals and exalting their irritability, predispose them also to dysentery.

Colitis presents several forms very different in relation to the degree of phlogosis and the accompanying circumstances; we shall describe them rapidly, our end being only to pause on the points of pathology which physiological medicine has elucidated.

The irritation of the large intestine is sometimes so light that it only constitutes a trifling indisposition; such is the diarrhœa often following bad digestion; after two or three liquid stools, and some rumbling of the bowels, the action of the large intestine returns to its normal state.

Diarrhœa comes on almost always suddenly ; sometimes constipation precedes it for several days ; it is announced by wandering pains in the abdomen, particularly around the umbilicus, by borborygmus and a sense of fullness and heaviness in the pelvis. These phenomena disappear after the evacuations, and return when the patient has passed a few hours without going to stool ; the intestinal or colicky pains are sometimes very severe, but it is only at intervals, and they are calmed by rubbing the abdomen, and compressing or covering it with warm cloths. The alvine evacuations are more or less frequent ; they are ordinarily scanty. Discharges of very different aspects give rise to a sensation of heat in the anus during their passage, but this opening is not painful ; if, however, the evacuations are often repeated, they are accompanied by tenesmus. The discharges, composed at first of softened fœces, are then liquid, sometimes mucous, at other times and more frequently serous ; ordinarily they are yellowish and fetid ; in other cases greenish, greyish or whitish, and then they exhale little odour ; it is according to these differences of aspect, of the discharges that this superfluous division has been established, viz. *serous diarrhœa*, *mucous diarrhœa*, *stercoral diarrhœa*, *bilious diarrhœa*, *purulent diarrhœa*, *veminous diarrhœa*, &c.

When the *diarrhœic colitis* (*colite diarrhœique*,) is very light, it does not excite sympathies ; but if the evacuations be frequent, it is accompanied by thirst, anorexia, a clammy state of the mouth, redness of the edges and point of the tongue, a sensation of weakness and lassitude in the extremities, which always become svery great in a short time. When it is primitive, it is very rare that it provokes an irritation of the superior part of the canal, sufficiently intense to give rise to febrile phenomena. When the contrary happens, it receives the name of dysentery ; either gastritis existed before it, or it is established at the same time.

The duration of this degree of colitis is very variable ; most frequently limited to one or several days, it extends to twelve, fifteen, and twenty, if the causes producing it have acted with intensity, if the atmosphere be damp, if the patient be imprudent in regimen, or if he be submitted to a stimulating treatment. Sometimes it rises to the degree of dysentery, at other times it passes into the chronic form.—But before occupying ourselves with the latter, we should speak of dysentery.



This degree of inflammation of the colon, is characterized by severe colics, by frequent necessity of going to stool, efforts often abortive, painful evacuation of a small quantity of mucous matter, ordinarily streaked with blood.

Most frequently the grade of colitis which has received the name of dysentery, is not at first attended by the symptoms characterizing the latter ; they are preceded by those of light inflammation of the colon, which at the end of some days acquire more intensity and give rise to more serious accidents. Sometimes, however, and particularly in epidemics, it presents from its commencement, very great activity. The patient experiences at first a sort of commotion in the arch of the colon : it seems to him, says Pinel, that secretions are thrown off from it, which flow into the lower part of the intestine. He is troubled with colics, becoming more and more severe, with a sense of twisting which seems to pass along the course of the intestine, from its superior part to the anus, a transverse constriction in the direction of the arch of the colon, compared to the sensation produced by a bar placed on the abdomen. Soon, frequent disposition to stool comes on, accompanied by painful tenesmus, pruritus and an acrid pricking heat is felt in the anus ; the patient gets up every instant and wearies himself in fruitless efforts ; he, however, discharges from time to time a small quantity of glairy, viscid matter, mixed with bloody streaks, sometimes composed of pure blood, of a disagreeable and sometimes insupportable odour ; these evacuations relieve the patient for a few moments and they become more and more frequent, in proportion as the disease progresses. Notwithstanding the intestinal pains which the patient experiences, the belly is little or not at all painful on pressure ; when the sensibility augments, we should conclude, according to the remark of Broussais, that peritonitis is developed. The patient is in a state of uneasiness and inexpressible anxiety. His strength is prostrated from the commencement, and the feebleness is greater in proportion as he is tormented by tormina and tenesmus ; and as the evacuations are scanty.

It is impossible for irritation of the colon to exist in so high a degree, without giving rise to sympathetic irritations. From the commencement, we observe symptoms of gastro-enteritis, increasing with the colitis. The thirst, dryness of the mouth, redness of the tongue, epigastric sensibility,

and the other local and sympathetic symptoms of inflammation of the superior part of the digestive canal are then manifested, under one or the other of the forms we have before laid down. From the commencement of the disease the pulse is frequent ; it is developed if the subject be strong and the pains not severe ; under the opposite circumstances, it is small and accelerated. We will not speak of the sympathetic phenomena presented by the brain, skin, and secreting organs, &c. ; they are not manifested except when gastro-enteritis exists ; and the co-existence of colitis not modifying them in any thing, we refer to the description we have given of them when treating of acute gastro-enteritis.

This extension of irritation to other organs, gives to dysentery very different forms, of which authors have made species. M. Soudan, who has applied to the study of this disease, very successfully, the principles of the physiological doctrine, has correctly connected each one of these species to the organs from whence they spring, and has shown that they all appertain to the different forms of gastro-enteritis, complicating colitis. Let us follow him in this examination.

Inflammatory dysentery is a *gastro-entero-colitis*, developed in a subject whose sanguine system is predominant.—It comes on often after the suppression of a habitual-hæmorrhage ; we see it in dry and hot seasons, after the abuse of stimulants. Cephalalgia, muscular pains, and a very intense continued fever, accompany it ; the pulse is full and strong, the face red and tumefied, the conjunctiva injected, the thirst ardent, the tongue of a vivid red on its borders.

When the lymphatic system predominates over the sanguine vascular system, (as in children, women, subjects submitted for a long time to debilitating causes,) and when the irritation of the stomach and intestines predominates in the mucous cryptæ, we observe mucous dysentery, that is to say, the union of the signs of colitis with those of mucous fever. The tongue is white and moist on its surface : and red on its borders ; aphthæ often supervene on the internal face of the cheeks and tongue ; the thirst is slight, the inappetency absolute ; sometimes we see vomiting of viscid matters ; the pulse is small and feeble, the heat of the skin pungent to the touch. This form often passes to the chronic state.

When gastro-entero-colitis is accompanied with irritation of the liver and supersecretion of bile, we see *gastric or bilious dysentery*; it is often presented under this form in epidemics. It is characterized by a yellowish coating of the tongue, which, at first moist, becomes dry, and red on its borders. If the inflammation augments in intensity, we see it followed by great thirst, a strong desire for cold acidulated drinks, horror of food, sensibility or pain of epigastrium, yellow and fetid dejections, sometimes bilious vomitings, pungent burning heat of skin, yellow tinge of the conjunctiva and parts surrounding the alæ of the nose, frequency and hardness of the pulse, very severe cephalalgia, sleeplessness and often delirium. In this form the tenesmus is more painful, and the colics more violent.—When it reigns epidemically, it produces ordinarily very great ravages, by the facility with which the inflammation rises to a higher degree.

When gastro-enteritis complicating the three forms of dysentery, we have just examined, acquires a very great degree of intensity, the tongue and lips become fuliginous, and the skin livid, the dejections are very fetid, the pulse small and very frequent, and the patient falls into a stupor: this constitutes *adynamic or putrid dysentery*. At other times, instead of rising to a high degree in the stomach and small intestine, the inflammation predominates in the brain, or its meninges, and then we see delirium, agitation, convulsive movements, subsultus of the tendons, carphologia, &c. This union of gastro-entero-colitis, with a high encephalic inflammation, has received the name of *malignant or ataxic dysentery*. Finally, colitis, often complicates in autumn, typhoid gastro-enteritis; and in epidemics of dysentery, when the infection is very deleterious, the latter very frequently complicates colitis.

The duration of inflammation of the large intestine is very variable; when however, it presents no serious complications, it terminates ordinarily in eight, ten or twelve days, or loses its intensity. The tenesmus diminishes and ceases, the évacuations are less frequent, and return by degrees to their ordinary state; at the same time the signs of gastro-enteritis disappear. When dysentery produces death, in its acute stage, it is never by inflammation of the colon alone, but by the coexistence of that of the superior portion of the canal or of the brain, and frequently by both at the

same time. When these complications, sufficiently grave to produce death, do not supervene, and when resolution of the inflammation does not take place, it passes into the chronic state, and then often terminates by exhaustion.— Unless the colitis be light, and the gastro-enteritis accompanying it have little intensity, the prognostic is always unfavorable and it becomes very fatal when it puts on the *adynamic* or *ataxic form*. The danger is not only relative to the intensity of the gastro-entero-colitis, but also to the circumstances under which it is declared. It is much less great in young and vigorous subjects than in those who are debilitated by excesses, by bad alimentation, by abundant deperditions, or who are affected by another inflammation, acute or chronic; when it is sporadic, than when it is epidemic. According to M. Desgenettes, dysenteric epidemics are more destructive than the plague. Dejections of pure blood announce a very acute inflammation. A small accelerated pulse, joined to alteration of the expression of countenance, to lividity of the skin, to coldness of the extremities, to cessation of pain, are very bad omens, and should lead us to dread gangrene of the intestine, which however, according to M. Broussais, rarely takes place.

Chronic colitis succeeds to acute diarrhœa or dysentery, or it exists primitively under this form, especially when it follows gastro-enteritis, or when it is produced sympathetically, by the chronic inflammation of another organ, like that coming on in the last stage of phthisis pulmonalis, or of cancerous degenerations, &c.

Under all these circumstances, chronic colitis presents the same characters. If it has at first been acute, a notable diminution takes place in the intensity of the symptoms; the colics and tenesmus disappear; the stools are more abundant and less frequent; they only take place three or four times a day, sometimes however, seven or eight; they present, as in the acute state, different aspects; they are ordinarily yellow and composed of liquid excrements; when the phlogosis is old, they are sometimes purulent; the latter phenomenon is very alarming, for it ordinarily announces the existence of ulcerations in the large intestine. When the colitis is not accompanied by chronic gastritis, the patients have ordinarily a keen appetite, which they resist with difficulty; and when the disease does not arouse any general phenomena of excitation, they experience an unusu-



al desire for the most substantial food, generous wine and all the tonics. The ingestion of these substances produces at first a sensation of well being, but at the end of several hours, they experience colics and frequent evacuations of half digested aliments; sometimes the latter pass through the digestive canal with great rapidity, and are voided without having undergone scarcely any alteration (*lientery*).— Besides, the number of evacuations and the uneasiness accompanying them, bear a relation with the regimen followed by the patient. When he makes use of a small quantity of food, furnishing little excrementitial residue, they are rare and scanty; and under the influence of this regimen and other means, they soon cease entirely, if no disorganization of the large intestine has taken place; the patient recovers by degrees his strength and flesh, and returns to health.— If on the contrary, chronic colitis be not combatted by proper treatment, it continues. It may remain stationary for a long time; when however, it continues for several months, it produces the most serious accidents, unless it be frequently interrupted. But in general, especially when united to another chronic inflammation, it gradually produces a mortal exhaustion; emaciation makes rapid progress, the muscular forces are annihilated, the face is wrinkled, pale, and of a dirty yellow, the skin is dry and covered with a crust of an earthy aspect; morning sweats often hasten the progress of the emaciation; sometimes the skin is habitually dry and harsh to the touch, and cutaneous perspiration seems no longer to go on. When chronic colitis has arrived at this state, it sometimes passes on to the acute state, or at least signs of acute gastro-enteritis are manifested, to which is soon joined encephalic irritation, and the patient dies in a delirium. At other times the chronic form of the inflammation continues; but it is always accompanied in the last stages by a chronic gastro-enteritis, if the latter did not exist from the beginning; in the evening the pulse rises and becomes frequent, the cheeks are florid, and the skin hot and dry. The patients die much emaciated; but most frequently when the first mode of termination, just spoken, of does not come on, the lower extremities become infiltrated, and when the œdema reaches as high as the pulvis, an effusion of serosity takes place in the peritoneum.

Death does not always happen in chronic colitis from the exhaustion it produces, or from the development of gastro-

enteritis, or an encephalic irritation ; when diarrhœa is produced by another chronic inflammation, death is at the same time the result of the progress of the latter.

ARTICLE IV.—ALTERATIONS PRODUCED BY INFLAMMATION  
OF THE GASTRO-INTESTINAL MUCOUS MEMBRANE.

It would be impossible for us to present a better description of the lesions produced by acute and chronic gastro-enteritis, than that given by my friend, Doct. Scoutetten, (who has applied himself for several years to the study of pathological anatomy,) in his inaugural dissertation. These details, not admitting of an analysis, we will make use of them with the consent of the author, by inserting here in its own language, the part of the thesis consecrated to the history of the alterations of the stomach and intestines.

*Acute lesions of the digestive canal, or alterations observed after bilious, mucous, adynamic and ataxic fevers of authors.*

1. *Tongue*.—This organ does not present commonly, very material, sensible alterations ; the tongue, however, is sometimes brown, black, dry and covered by very tenacious mucus. Very small ulcerations, aphthæ more or less numerous, sometimes exist towards its borders ; the folds of the mucous membrane called *franges*, show in some cases, a manifest sanguine engorgement.

2. *The palatine membrane* may sometimes be excoriated : this is rare, we find one example of it in Prost.

3. *The velum palati* is sometimes red and dry ; the inflammation may be more or less violent, but there is no constancy in it.

4. *The pharynx* is not unfrequently inflamed. I have sometimes met in it an eruption of small white pimples, containing an opaque, homogeneous, well formed pus. We find there also, ulcers very variable in size and form ; they however, are rarely of great extent ; most frequently they originate from the little pimples just spoken of.

5. *Œsophagus*.—The mucous membrane of this organ is very often inflamed in one or several points, but most generally at the inferior or superior part ; the middle part then preserves the white or rose color which belongs to healthy mucous membranes. We sometimes meet ulcers of con-

siderable extent ; I have found one situated a few lines below the union of the œsophagus with the pharynx ; its breadth was about twelve lines ; all the tissues of the membranous canal were destroyed, the anterior face of a vertebra closed the opening, and prevented the effusion of fluids into the cavity of the chest.

Baillie observes that it is worthy of remark that these ulcers happen almost always immediately below the pharynx, or near the cardiac orifice of the stomach.

Bonnet and Portal have also met with ulcers in the œsophagus, and the latter author reports that the inflammation may be so high as to be followed by suppuration and gangrene.

6. *Stomach.*—The external surface of this organ scarcely ever presents signs of lesion ; and if we were to judge from appearances, we would suppose it to be perfectly healthy ; sometimes gases or fluids distend it, and in other cases, it is strongly contracted. It however happens, also, that it presents a red color, more or less marked ; if the membranes be separated, we see that it belongs almost constantly to the peritoneum, and that the inflammation has not been transmitted by the mucous membrane.

The shades of inflammation which the mucous membrane may present, are extremely various, from faint spots occupying only very limited portions, up to the most violent inflammation, not leaving untouched any part of the internal membrane.

In the lighter shades, the mucous membrane seems sometimes to be dotted with red, or there are ordinarily spots of a bright red, one or several lines in extent, formed sometimes by blood extravasated in the mucous tissue itself. These traces of light inflammation are not often perceived at the first glance ; it is necessary to scrape off the mucus which almost always covers them ; we discover then easily the phlogosis we speak of.

If the inflammation be more marked, the mucous membrane is affected to a greater extent ; the red color is often uniform, and it is principally towards the cardia or pylorus that it is seen ; a red circle, plainly formed, surrounds one or the other of these openings.

In some cases, the redness seems to follow the direction of the sanguine vessels. The inflammation may be sufficiently violent to attack the whole mucous surface ; the co-

lor is of a red more or less deep, sometimes of a bright scarlet, or having an obscure tinge, almost brown; often we see the redness become gradually brown, and thus pass through all the degrees of color; at other times the red and brown spots are intermixed, &c. All these shades are so variable, so multiplied, that words would never suffice to represent them.

Under some circumstances, when the inflammation of the stomach is very acute, we observe a submucous emphysema, a rare and very remarkable phenomenon. The membrane is elevated, and forms unequal eminences, of several lines in height; if it be pressed on one point, the air passes into the neighboring cells, and distends other parts; if we incise one portion of the mucous membrane, we see the air distend the cells of the tissue, often without being able to escape.

Perhaps some might wish to attribute this extrication of gas to putrefaction, but this would not be correct. I have met this alteration three times, and in one case the body was opened six hours after death: moreover, all the tissues were in good condition, and nothing announced a beginning of decomposition. In order to leave no doubt on this subject, I have putrefied stomachs, and have never observed similar phenomena. I think, from this, it may be asserted that this emphysema is one of the extremely varied products of irritation, which has determined the cellular tissue to secrete gas.

Prost reports a case bearing great analogy to the fact just cited, but there are neither details nor reflexions on this subject.

A violent inflammation of the mucous membrane may sometimes produce gangrene; authors report several instances of this kind; I have never met with it.

Ulcers of the stomach are very rare in acute inflammation; there are merely slight erosions, scarcely abrading the mucous membrane; I have never found any extending to the muscular coat.

The follicles of the mucous membrane may be subject to severe inflammation; in this case they become developed, presenting the aspect of small pimples resembling an eruption. Prost has seen them sometimes; Rœderer and Wagler have met them frequently; I have also seen them, but rarely. I will return to the explanation of their develop-



ment when I speak of the large intestine, where I have frequently observed them.

If the stomach be found contracted in this state of inflammation, the rugæ of the mucous membrane are ordinarily strongly marked, and it is generally on these that the phlogosis is most marked. If they be unfolded, the vessels are extended, the mass of blood is diminished, and the red color becomes more obscure ; but we can never make it disappear entirely, as has been asserted ; which arises from this circumstance, that a certain quantity of blood, attracted by irritation, is identified with the tissues, and cannot then flow back again into the vessels.

7. *Small intestines*.—Viewed externally, these organs seem almost constantly healthy on opening bodies. Often some portions are pale and dilated with gas ; if we raise them up, we find below them portions contracted, lying in the pelvis, showing sometimes manifest inflammation, but not unfrequently also presenting no trace of redness.

The explanation of these peculiarities seems to me sufficiently easy ; the inflamed portions are contracted ; the gases not finding room there any longer, pass into the healthy portions ; the latter suffer themselves to be dilated ; thus puffed up, they are forced to extricate themselves and to place themselves on the superficies.

To account for this phenomenon, we have said until the present, that the portions of the mesentery appertaining to the diseased intestine, contracted and retired behind those which are healthy ; but nothing proves the contraction of the mesentery, which, if it took place, would retract the intestines against the vertebral column, whereas they fall into the pelvis. Sometimes, it is true, we find them retired towards the spinal column ; but the contraction of the mesentery is still illusory ; indeed it is the ganglions, which by swelling, separate the two lamina of the peritoneal fold, and thus draw the intestine near the posterior wall of the abdomen.

The mucous membrane of the intestines presents a fact very important to be remarked, viz. : the interruption of the phlogosis, which, after having existed in one space of greater or less extent, sometimes disappears all at once, to reappear a little distance off ; this circumstance has imposed on many practitioners, and even on distinguished anatomists. They were pretty generally persuaded that, when the in-

flammation exists in these parts, it must extend from one extremity of the intestine to the other ; but this was an error ; the mucous membrane is like the skin ; a very circumscribed point may be highly inflamed, and the rest entirely untouched.

The different parts of the intestine are more or less susceptible of inflammation ; the superior portion is often healthy, whilst the lower presents dreadful disorders ; nevertheless all the intestinal tube may be inflamed ; but this is rarely met with in the acute state.

If the inflammation be of a low degree, we often find the *valvulæ conniventes* phlogosed, whilst the intervals separating them, are untouched. When the inflammation is of a higher grade, we find patches of greater or less, intensity of color, and extent. Mucosities of very different natures cover it ordinarily ; as they adhere with great force it is necessary to remove them with the scalpel or to wash the intestine in order to appreciate correctly its redness ; we then see the sanguine vessels engorged with blood, and according to their fullness, display a strong or obscure red, so that we can almost at pleasure produce these varieties in color ; I have done this very frequently, and it has demonstrated to me that these different shades are attributable only to the greater or less quantity of blood attracted by irritation.

Another very remarkable fact is, the isolation of each of the coats of the intestines ; they have a peculiar life which seems to protect them and to prevent, in the greater number of cases, the irritation of one from being communicated to another. Thus, when even the mucous membrane presents a very violent inflammation, (without however, ulcer or other disorganization,) we may separate it from the muscular coat without much difficulty, and be satisfied that the latter is not at all altered. It is the same with serous membranes. Moreover, it sometimes happens that the peritoneum becomes suddenly inflamed, produces a real revulsion, and displaces the inflammation which existed in the mucous membrane ; and we discover that the latter has been inflamed by traces more permanent than redness.

The violence of the inflammation may determine gangrene, but this is more rare than is supposed. They often com-found a black degeneration of the mucous membrane with true gangrene : when the latter exists, it may confine itself

to the internal membrane, or attack the whole thickness of the intestine. In all these cases, the parts are black, very soft and friable, separate with the greatest facility; and if all the coats are gangrenous, the finger may be passed through without meeting any marked resistance.

Ulcers of the small intestines are very common in the acute stage; they do not appear generally before we have descended the canal as far as the ileon; they augment gradually in proportion as we advance towards the ileo-cæcal valve, and are sometimes so numerous in this part that all the mucous membrane is destroyed.

The number, extent, position, figure, and depth of each one of these ulcers, vary singularly: sometimes only a line or two in extent, they scarcely abrade the mucous membrane; in other cases they extend deeply, destroy the muscular and serous coats, and give place to a perforation allowing the contents of the intestines to flow into the cavity of the peritoneum.

The forms of the ulcers are singularly varied: ordinarily round or elliptic, some however, are found triangular or quadrangular. Their edges are perpendicular, and they seem to have been formed by a cutting instrument; at other times they are uneven, granulated, very thick and irregular. The bottom is often covered with a very tenacious mucous; sometimes they resemble an ulcer of the skin, the bottom of which is of a deep red. It is not uncommon also to see the muscular coat entirely bare; its fibres are very distinct, and look as if they had been carefully dissected.

The parts surrounding the ulcer are ordinarily highly inflamed; it however happens sometimes that this does not exist, and even that the borders of the ulcer are altogether pale. The reason of this circumstance generally is this, that a high degree of inflammation being developed, a short time before death, in the peritonium or in a portion of the mucous membrane, more or less removed from the affected part, has produced a revulsion and destroyed the redness.

It is very important to know these facts, lest we should think that the ulcerations may form without inflammation, and also lest we should pass too lightly over the colorless portions of the intestines, and say, as I have often heard said, that there is nothing, because no redness is perceived.

*Cicatrices of Ulcers.*—After having existed during a certain time, ulcers tend to cicatrization, and it is not uncommon to meet with them perfectly cured.

Researches sufficiently repeated have enabled me to discover the march, nature follows in this cure ; I must trace it with some detail, because every day I see persons confound different alterations of the intestine with true cicatrices.

When the ulcer is small, only four or five lines in extent, the edges at first sink down, if they are thick and unequal ; then they contract, approach each other, and at length touch ; then they become united, and some time after, there remains only a little eminence, finally disappearing. If the size of the ulcer do not permit the edges to touch, then about one of its points, ordinarily near the centre, a thin, whitish or rose colored pellicle forms, extending in every direction and uniting the opposite parts.

If the ulcer be one or more inches in extent, the edges are not lowered when the cicatrization has already commenced ; as soon as one point is healed, others do not remain stationary ; soon they extend themselves, unite together and form a very thin pellicle, which seems to approximate the borders of the ulcer ; the portion of the membrane surrounding it becomes wrinkled, sometimes in radii, and forms thus a very striking resemblance to a rose. The cicatrix thus formed remains for a long time more depressed than the surrounding mucous membrane ; but it finally extends and the intestine resumes its capacity.

Once, however, I found the ileon so constricted by an ancient cicatrix, that a large writing quill could scarcely pass through it.

The cicatrices are smooth, whitish, or rose colored, presenting no black point, as some persons have improperly thought.

After ulcers we should speak of a condition entirely opposite of the mucous membrane, which consists in a very marked thickening, presenting itself in patches of a pretty regular form. Already M. Petit, physician of the Hotel-Dieu, and several other persons, have fixed their attention on this sort of alteration. It is met with frequently ; we proceed to give the march of its developement. When these thickenings begin to form, the mucous membrane is seen to arrange itself into folds more or less marked, having a honey-



comb appearance ; soon these folds augment, join together, and form a spot of one, two or three lines in thickness, elevating itself above the plane of the mucous membrane.—The size of these excrescences ordinarily is from a few lines to several inches in extent ; like ulcers, we find them more abundant towards the ileo-cæcal valve than any other part ; they are generally, untouched—I have however found some of them commencing to be corroded by an ulcer ; but this is not common.

If we separate the muscular from the mucous membrane, we easily perceive that it is the tissue of the latter which is thus swoln and disorganized ; when we cut into these swellings, we find a reddish, greyish, or whitish tissue, of considerable tenacity. If we macerate for a few days a portion of the intestine presenting this appearance, we see developed, a great number of little openings which appear to be those of the follicles closed by the swelling.

The intestines of young persons have more frequently presented to me this alteration than those of persons advanced in life. I have for a long time remarked, that we hardly ever find alterations in the other portions of the membrane, when these swellings existed.

The follicles of the mucous membrane may be affected in two ways ; in the first case, they swell, form a great number of little pimples, elevated above the mucous membrane ; at first hard and fleshy, they finally become soft, and sometimes contain pus ; often their centre appears depressed—this is attributable to the opening of the follicle.

In the second case, the follicles are not swoln ; their extremities alone are apparent ; they are often seen under the form of very numerous small points, forming brown circumscribed spots, of various shapes, but most frequently elliptic, being sometimes of one or several inches in extent. The valvulæ existing in this part are almost constantly destroyed, without presenting the least trace of ulceration ; they disappear however as soon as the thickening ceases to exist. If we place the intestine before the light, we discover that it is manifestly more opaque in this part than in that surrounding it.

Invaginations are very frequent during acute inflammation of the intestine ; they may take place in two ways ; the superior end introduces itself into the inferior, or the latter penetrates into the superior. The latter case is most rare ; I have only met with it three or four times.

The first and middle portions of the small intestine are more subject to volvulus than those nearer the ileo-cæcal valve.

Those persons who have advanced the contrary, doubtless had not made a sufficient number of post mortem examinations, and were led to this conclusion from a few particular facts.

Invaginated parts, frequently present traces of inflammation; they are not however constant, and it even is not very rare to find them more pale than the healthy parts, which seems attributable to the compression produced by the constricting portion; the latter more frequently presents traces of inflammation which is due to the irritation produced by the invaginated intestine.

The length of the volvulus varies singularly; sometimes it is hardly five or six lines; in other cases it is several inches and even several feet. There exists some astonishing instances of this disease; almost the whole of the small intestine has been seen contained in the large intestine.

The formation of volvulus is quite simple; one portion of the intestine contracts circularly; the neighboring part remains relaxed, or is distended with gas; vermicular motion comes on, and pushes the contracted into the relaxed portion. This is not a hypothetical theory—it is the explanation of facts; we may constantly observe and be convinced of the reality of what I have just advanced; moreover, it is not rare to meet with cases where the invagination being on the point of taking place, we may by pushing the contracted intestine, terminate what nature did not have time to finish.

Gangrene may sometimes supervene on volvulus; it is the result of violent inflammation. In this case the two extremities of the intestine may unite; the detached portion be discharged by the anus and the patient recover. Several physicians have reported cases of this kind.

8. *Large intestine*.—Acute inflammation of the large intestine is very frequent. The ileo-colic valve, the cæcum, and the superior portion of the colon are very often affected: the inferior part may be so likewise; this is observed especially when certain causes have produced a great number of dysenteries.

On the exterior, these intestines appear almost always perfectly healthy; they are contracted, if the inflammation be

recent; but if it exist for ten or twelve days, the intestine is frequently distended with gas or faecal matter.

Several intestines have been found, where a portion of the colon was sunken and dried in an astonishing manner; one would have thought on beholding them, that he looked on a piece of yellowish parchment. Prost has met with this alteration; I have seen it once only. I have found no example of it in the authors cited.

The large intestine does not partake in all the divers modes of alteration we have observed in the small intestine; and it is very remarkable that two portions of a membrane, which is evidently continuous and apparently the same, should enjoy a vitality seemingly so different.

The ileo-cæcal valve and large intestine often display a phlogosis very marked, discoverable by very numerous red points, by striæ, or by spots more or less extended.

The inflammation may become sufficiently violent to produce ulcers, and the ileo-cæcal valve frequently presents traces of profound alteration. The inflammation sometimes extends as far as the anus.

I have never found on this mucous membrane those circumscribed thickenings we meet so frequently in the small intestines.

I have never met with invagination in the large intestine; they are not, however, impossible; M. Portal cites an example of this kind.

This part of the intestine has never displayed to me emphysema beneath the mucous membrane, nor brown patches covered with follicles developed under the form of small black points placed below the level of the mucous membrane; but we meet not unfrequently a development of follicles near the ileo-cæcal valve; they diminish in proportion as they are remote from it; they form small isolated red elevations.

Such are the grades of alteration of the large intestine in the acute state; we see that they are much less numerous than in the small intestine—it seems that in the latter the functions being more multiplied, the disorders there on this account are more various; in the former, on the contrary, the simplicity of the function seems to give rise to less numerous modifications in organic lesions.

M. Scosutetten passes then to the description of lesions produced in the digestive canal by chronic inflammation, that

is to say, of alterations observed as consequences of *dyspepsia*, *cardialgia*, *hectic fever*, &c. : he exposes them like the preceding one, according to anatomical order.

1. *Buccal cavity*.—When the stomach and intestines are irritated in a chronic manner, the buccal cavity rarely partakes of the affection of these organs : neither after death do we find any appreciable alteration.

2. The *pharynx* sometimes shows ulcers more or less extended in breadth and depth ; their characters are in general the same as those of ulcers met in the acute state ; we will not then pause on these.

3. The *œsophagus* is almost constantly untouched ; nevertheless, serious alterations may be developed there.—Thus, besides ulcers, anatomists have found its vessels varicose, its cavity diminished and singularly narrowed by thickening of the mucous membrane, and by cartilaginous concretions. Morgagni speaks of a dissection made in Germany of the body of a great prince, whose *œsophagus* was cartilaginous on the exterior, and even osseous towards the stomach for the extent of an inch.

Scirrhus degeneration has sometimes been met with ; most authors of treatises on pathological anatomy report instances of this kind. We find on this subject a very curious case reported in the inaugural dissertation of Gust. Kunze, published in Germany : an ulcer having formed on the scirrhus membrane of the *œsophagus*, produced a communication between the latter and a vomica of the left lung.

4. *Stomach*.—One of the most frequent alterations we meet in dead bodies, is chronic irritation of the stomach.—The characters which make it known are not always easy to catch ; we should then attempt to describe them well, because, though very important, they are often neglected and still more often misunderstood.

On the exterior, the stomach often appears entirely healthy, sometimes contracted in its whole extent, at other times only at intervals ; it seems then to form two or three distinct pouches. This circumstance appears to have imposed on several observers, and has made them assert that they had found two or three stomachs in the same individual. Gases or fluids may distend it, and the splenic extremity of the stomach presents its sanguine vessels very distinct, dilated and as if varicose. This part of the organ is very often thinner than ordinary, friable, and gives way with the great-



est facility : we meet also, in some cases, a complete perforation.

On the interior, we observe the most varied shades of disorganization. One of the most frequent is attenuation of the *bas-fond* of this organ. When it exists, the mucous membrane is of various colors from, a dull white or grey, to a red wine lee. When it is scratched with the end of the finger, it is easily removed under the form of a pulp ; at other times it is eroded, presenting in the course of the sanguine vessels almost bare, furrows of half a line or a line in width. When the the blood fills these vessels, they have a bluish color ; if they are empty, their color is brown ; when they are in great number, they form patches, brown or violet, and sometimes black, or rather they are beautiful network. The alteration may be more profound, the muscular and mucous membranes be destroyed, and the serous membrane remain bare. If the alteration be still greater, perforation supervenes : the opening is generally irregular ; the edges are fringed, and often contract adhesions with the neighboring parts.

It is very remarkable, that often it is impossible to say positively where the mucous membrane ceases to exist. In proportion as we leave the *bas-fond* of the stomach, this membrane reappears, becomes thicker, red, and frequently presents other degenerations.

This kind of disorganization has received different names ; it has been called *ramollissement*, *spontaneous perforations*, *gelatinous disorganizations*, &c.

All these expressions have this defect, that they tend to make this kind of alteration a particular disease, requiring causes, a course and treatment proper to it. Here, as in other disorganizations, it is necessary to look at the irritation and not its effects.

Instead of attenuation or perforation, the stomach may be very much thickened, its mucous membrane display a uniform red color, as deep as scarlet. On the first glance, one might think it acute inflammation ; but if we examine with some attention, we see the vessels distended, varicose, announcing a chronic irritation ; and if we wish to be persuaded of it, it is necessary to macerate this organ for several days. The redness disappears, if the inflammation be acute ; if, on the contrary, it be chronic, the color will continue, and will even take on sometimes greater intensity. This circum-

stance is attributable to this, that in the former case, the blood not being identified with the tissues, separates from them easily, whilst in the second, the vitiated nutrition, which has been going on for a long time under the influence of chronic inflammation, has combined it so intimately with the tissues, that it cannot escape from them.

If ulcers of the stomach are very rare, as a consequence of acute inflammation, they are very frequent, on the contrary, after chronic inflammation. I have met with them particularly about the cardia and pylorus. Their depth may be sufficient to destroy all the coats of this viscus. In a similar case, Lieutaud has seen the colon, applied against the stomach, receive into its cavity, by means of an ulcer formed in this part, the contents which otherwise would have been discharged into the abdomen.

Scirrhus disorganizations are very frequent in the stomach; there is no anatomo-pathologist who has not met with cases of this kind; but a remarkable fact which has struck me, is that they are almost always developed at the two extremities of the stomach, whilst the attenuation we have spoken of, is only seen in the *bas-fond*.

When one portion of the stomach becomes scirrhus, the mucous membrane reddens and thickens; the vessels are swollen and become varicose; the muscular coat soon partakes of the irritation; the tumour becomes more developed and sometimes the whole stomach takes on this disorganization; the openings of the pylorus or cardia are narrowed and sometimes entirely obliterated. An ulcer may be developed on the surface of the tumour; its aspect is ordinarily greyish, uneven, covered with a very fetid, sanies, or it resembles a blistered surface.

If we incise this tumor, we remark very varied disorganizations; grey, black, white, red, &c. are mixed in divers manners; or one of these shades exists alone, and constitutes what authors have called *melanosis*, *encephaloid*, &c. We also meet parts which have become cartilaginous or even osseous.

Vegetations more or less voluminous are sometimes developed in the stomach; they form genuine polypi with narrow pedicles. Morgagni reports that Paulina found two in the same stomach; one was of the size of a small apple, the other that of a large filbert. Morgagni seems never to have met this kind of alteration; I have met it once only,

and this was in the ileon. The tumor was of the size of a filbert ; it was hard, of a red color, enveloped completely by the mucous membrane, which had preserved its thickness.

The mucous membrane of the stomach is seen of a bluish slate color, more or less deep, sometimes partial, but oftener general ; it indicates a chronic state kept up by an irritation of low degree.

There is still a degeneration important to be known, because it imposes on those who observe too superficially ; it is a black color of the mucous membrane, as deep sometimes as that of charcoal, which causes it often to be mistaken for gangrene of the stomach. This color does not come on suddenly ; it, on the contrary, takes a good deal of time to form. The villous coat commences by presenting very numerous small obscure points, leaving between them greyish or reddish spaces ; these points becoming more numerous, touch, become blended and form small black spots ; these unite into others, and the mucous membrane, from its former red, presents only one large black surface. In this state, the membrane is not friable ; we may detach it from the muscular coat, and discover that its external surface is not altered. We become still farther convinced by scraping it with a scalpel ; the surface is taken off and the rest of the membrane shows its ordinary color. If we macerate this membrane for some days, the *pigmentum* is much less deep colored and the least rubbing removes it with facility.

These researches lead me to think that this black color is only a vitiated nutrition of the internal surface of the mucous membrane. I have also seen on this mucous membrane a very remarkable green color ; but it was only partial, and always surrounded by a red color, or mixed with it.

5. *Small intestines*.—Their exterior aspect varies singularly : sometimes altogether pale, distended by gas, attenuated and friable in certain parts ; at other times strongly contracted, and so narrowed that their cavity scarcely exists.

Frequently we find in several parts of the intestine, red or brown spots, which declare internal alteration. They are often surrounded by white tuberculous points ranged circularly, appearing to be formed under the peritoncum :

they announce positively the existence of a deep seated ulcer, ready to pierce all the coats.

The alterations of the mucous membrane of the intestines have the greatest analogy with those of the stomach. It is worthy of remark that in the chronic state, the disorders are almost always more marked in the superior or middle part of the intestine than in the inferior. We observe the opposite in the acute state; but often persons allow themselves to be imposed on in this case, because there is a mixture of acute and chronic inflammation. Indeed, we then find near the ileo-colic valve, considerable disorders.

In the chronic state, ulcers are very frequent in the duodenum and jejunum. They are also found in the rest of the small intestine; but they are not so numerous near the ilio-coecal valve. Their characters are the same as in the acute state; in general, however, they are more extended and deeper.

A particular degeneration of the intestine is very frequently met with; the natural whitish or rosy color is changed into a slate color more or less deep. Often this state is regarded as entirely exempt from alteration; but we are persuaded of the contrary, when numerous post mortem examinations have permitted us to examine the march it pursues. The intestine, at first red, looses by degrees this color; its coats take on ordinarily more consistence; the bluish color becomes manifested; it is uniform, and never passes to deep black. If the tissues of the intestine are macerated, the discoloration is never complete.

The small intestines are sometimes inflamed from one extremity to the other; they present in certain cases a very singular fleshy aspect: the valves are thick, straight and applied against each other like the leaves of certain agaric plants; the borders are uneven, often denticulated, rugous, and break short on the least effort. In this case, all the membranes are intimately united and confounded, and prolonged maceration does not enable us to separate them distinctly.

Scirrhus degeneration is seldom observed but about the ileo-coecal valve; the other parts of the small intestine present this appearance rarely; I have never seen it in the numerous post mortem examinations I have made.

Baillie has twice met with ossification of the intestinal mucous membrane.



6. *Large intestines*.—Like the small intestine they are either dilated or contracted; sometimes their capacity is enormous; their coats may be separated by serosity or by an infiltration of blood forming ecchymoses here and there.

The surface of the mucous membrane presents a great number of alterations; they are in general very violent about the ileo-coecal valve. In this part, scirrhi and all kinds of deep rooted degenerations are seen. The inferior part of the rectum presents the same alterations; we see besides, in the latter, a peculiar development of vessels forming eminences more or less voluminous, called *hemorrhoids*; sometimes a varicose vessel is torn; the blood infiltrates into the surrounding cellular substance and forms a small tumor called condylomatous (*marisque*,) by some persons. The internal aspect of these tumors is ordinarily red or violet; a considerable quantity of blood escapes when they are incised; these tumors frequently undergo the disorganization called scirrhus.

The follicles of the mucous membrane of the large intestine frequently participate in its inflammation; we will occupy ourselves with this subject for a moment, because many gross errors have been committed with regard to it, which may have an unhappy influence.

When the follicles are irritated, they at first appear under the form of a small black point, ordinarily surrounded by a very visible areola. The point becomes more developed, thickens, and the areola disappears; the little rising, about the size then of the head of a pin, is thick, fleshy and whitish or reddish; we perceive no pore on its summit; but the fluids continuing to be secreted in the interior of the follicle, distend it, finally open the pore and flows over the mucous membrane. The parietes forming the swelling, sink down, become depressed, and present an opening in the centre. When the degeneration continues, the little swellings become white; their base is ordinarily surrounded by a red circle; an opaque pus, well formed, comes from the extremity where it is compressed; in this state they resemble somewhat the pustules of small pox, and some persons little attentive, have even improperly regarded them as such. Sometimes several pustules unite together, and form a small abscess, which as I have twice seen, may contain a thimble full of pus.

The mucous membrane of the large intestine, experien-

ing a high inflammation, may communicate it to the subjacent cellular tissue ; suppuration taking place in the latter, detaches this membrane in fragments, which sometimes hold on for a long time by a kind of pedicle, and at other times they are entirely detached, and fall into the cavity of the intestine.

When I met this fact, I observed on a pretty large piece of the mucous membrane floating in the intestine, and retained only by a very narrow pedicle, ulcers of several lines placed on the external surface, which corresponds to the muscular coat. These cases are rare, and Morgagni is not sure of having seen them ; he only thinks that they may happen. We find also in the large intestine, black spots, isolated, which seem to appertain to all the coats ; I have only met with them twice ; I do not understand well their formation.

The ulcers of the large intestines are sometimes very wide and deep ; they offer few other remarkable peculiarities.

The black color of the mucous membrane has also been observed in the large intestine, but more rarely.

The various alterations we have just described, belonging to the acute and the chronic state, are separated by very marked characters, which it seems to me impossible to mistake : but it is not unfrequent to meet these two forms united together, and if we may use the expression, combined, forming an intermediate state called *sub-acute*. This circumstance is sufficiently easy to recognize, since the redness denotes the activity of the inflammation, and the extent of the disorganizations prove that they have already existed for some time.

Another very important circumstance, and one which it is very important to know, is the sudden development of an acute, on a chronic inflammation. In this case the traces of a high degree of inflammation are displayed in certain points, and in others we find signs of an old irritation. We cannot here unite these various characters ; the memory may easily supply this defect, and a little habit will enable one to recognize promptly their existence.

The aspect of the fluids contained in the digestive canal is extremely variable ; their color is yellow, white, black and green ; sometimes it is pus, bile, or pure blood.

Fluids are in greater or less quantity in the intestinal ca-

nal ; sometimes they distend it powerfully ; in other cases, they only form a thin layer, covering the mucous membrane. It very rarely happens that the fluids present the same aspect, throughout the whole extent of the digestive cavity ; they are often yellow or green, in the stomach or duodenum, and white or red in the other parts.

When the blood is poured out, it only presents in the greater number of cases, a partial oozing in small quantity ; at other times it fills and distends the digestive tube. I once found the stomach, large and small intestines full ; an enormous clot was in the stomach ; its color was an obscure red. In the small intestines, the color was very near the same, but a little deeper ; in the large intestines the blood was decomposed, of a tarry consistence, and its color completely black. The stomach and intestines, freed from this blood, had a uniform red color, not removeable by washing ; the large intestine was entirely white ; the exhalation only proceeded from the superior part of the digestive canal.

A phenomenon worthy of attention is that the fluids are almost always found in abundance on the inflamed parts, to which they strongly adhere, whilst the healthy parts are deprived of them. Prost and Broussais have very closely observed this fact, but they have given a different explanation of it. Prost says that the parts are inflamed, because the mucus being too abundant, becomes altered, and contracts stimulating properties, producing inflammation of the mucous membrane. Broussais, on the contrary, thinks, that the inflammation commences, then that the fluids, though free, are attracted by the phlogosis towards the diseased parts.

The latter opinion alone, appears to me admissible, unless we should wish to relapse into humoralism, from which we have had so much difficulty in extricating ourselves. Is it not necessary, in fact, in order for the fluids to be more abundant in the intestinal canal, that some cause attract them there ? Now the cause can only be an excess of life in the parts—a morbid irritation. This proves also, that the fluids do not produce the first inflammation, and that it is by curing the latter this abundance of fluids is stopped. The presence then of the fluids is only a secondary effect ; they may also be absent and the inflammation notwithstanding exist.

The different fluids found in the digestive canal may dry

up and form false membranes; these are very common on the œsophagus, where they have the form of a very thin white pellicle, sometimes denticulated on its borders. In the intestines they may be sufficiently extended to form a complete circle, and resemble very closely the parts on which they are moulded. This last circumstance has often imposed on practitioners, and has made them think that the patients had discharged a portion of the intestine when in fact they had only discharged a false membrane.

After having described the alterations produced in the digestive passages by the different grades of inflammation of their mucous membrane, M. Scoutetten examines the lesions sympathetically produced in other organs by gastro-enteritis.

The *liver* is almost constantly affected in this disease, especially in hot countries. Acute inflammation is known by the volume and change of color which this organ undergoes; under the influence of inflammation of the digestive canal alone, a phlegmon is rarely formed.

When the latter has been irritated in a chronic manner, we almost always find the liver altered. The most common change is a yellowish color intermixed with small red points; the whole organ participates in this change, or a part only. When this alteration is to a great degree, the name of adipose liver has been given to it. Numerous observations have convinced M. Scoutetten that this alteration was not produced by chronic duodenitis alone, but that inflammation of all parts of the small intestine may produce it. It is not rare to see the liver tuberculous and even cancerous.

The gall bladder is rarely inflamed; we, however, find it in some cases of a more or less deep red. When the irritation is chronic, we sometimes see it entirely black; its mucous membrane may also ulcerate, and give rise to a mortal perforation. The color of the bile presents many varieties; sometimes yellow, green or blue, we find it also black or entirely colorless like water.

The ductus choledochus may present inflammation, but this is far from being constant. We cannot then attribute irritation of the liver to the continuity of the mucous membranes of the duodenum and of the duct.

The *spleen* very frequently presents alterations, but they are by no means constant. Thus, after a very acute inflammation of the digestive canal, the spleen will scarcely



present any change ; in other cases on the contrary, the intestines will be slightly inflamed, and the spleen greatly altered.

The *pancreas* is not often affected; it is however, sometimes found gorged with blood, very hard and grating, under the scalpel—at other times it is very white and much softened. After chronic gastro-enteritis, M. Scoutetten has found it larger than the fist, showing scirrhus disorganization in several parts.

The *brain* rarely presents traces of inflammation after gastro-enteritis, but this is not the case with its envelopes, or at least with the meninges.\* M. Scoutetten had already announced in his thesis, the relation existing between the irritation of these membranes and that of the mucous membrane of the intestinal canal ; but he has proved this proposition by facts, in a paper inserted in the *journal universel des sciences médicales*. He asserts from the examinations of a great number of bodies, that there exists a connexion so strict between the digestive passages and the meninges, that when the first are irritated in an acute or chronic manner, the membrane of the brain participates always in the same shades of irritation.

This sympathy does not exist equally between the meninges and the different parts of the intestinal canal. The stomach, and especially the small intestines appear to have with these, relations much more strict than the large intestine.

After acute inflammation of the digestive canal, the vessels of the meninges are injected, they form red patches on several points of its superior face ; sometimes we see sanguine exudations more or less abundant. If the inflammation of the intestinal canal have been violent, almost all the membranes are of a very deep red color, dry and shining.— Sometimes there forms beneath the arachnoid an albuminous exudation, exactly resembling pus. When the inflammation has been high, adhesions often form between the two hemispheres of the brain, and it is not without difficulty they can be separated. The prolongations of the arachnoid penetrating between the convolutions of the brain, are very red and highly injected ; they adhere ordinarily with a great deal of force.

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\* By meninges here is meant only the pia mater and arachnoid, a name given to them by Chaussier.

After chronic gastro-enteritis, we find the meninges slightly opaque ; there is some serosity infiltrated into the meshes of the cellular tissue, its thickness seems singularly augmented, and it then assumes a gelatinous aspect. Sometimes there is an effusion of serum into the ventricles sufficient to compress this organ against the osseous parietes, and to prevent infiltration into the meshes of the meninges ; the latter then appear dry, but they are always thick and opaque.

When the digestive mucous membrane presents traces of chronic inflammation, which has passed into the acute state, we find in the meninges corresponding lesions.

In the acute state, these different alterations have their seat at the superior part of these membranes, on the anterior lobes of the brain principally. In the chronic state, it is especially about the great fissure that these alterations are seen ; the parts corresponding with the parietal and occipital fossæ are those which display most frequently gelatinous infiltration.

M. Scoutetten remarks that the inferior part of the meninges scarcely ever present traces of irritation ; so that, in cases where there are doubts on the state of this membrane it will be sufficient to compare together its superior portion and that covering the inferior face of the brain, to recognize the slightest alterations of the first.

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#### CHAPTER IV.

##### RELATION OF GASTRO-ENTERITIS WITH THE ESSENTIAL, (IDIOPATHIC,) FEVERS OF AUTHORS.

We have said, with M. Broussais, that essential fevers of authors were referable to gastro-enteritis, simple or complicated ; and, in the examination we have made of the different forms of this inflammation, we have shown that it was on the differences they present, that the division of fevers had been established. Notwithstanding its proofs, this part of the new medical doctrine has given rise to more contro-

versy than any other, and has met more obstacles ; so many are the difficulties in overturning a doctrine, however erroneous it may be, when it has received the sanction of time and of many celebrated men. All arguments have been exhausted by the advocates of the essentiality of fevers, and all have yielded to the victorious proofs of physiological medicine. At present, the question is decided amongst all enlightened and candid men : those who still deny the evidence, either have not studied this doctrine with sufficient care, or are actuated by motives which it would be painful to qualify.

We will not call up again the discussion this matter has excited ; it would be at the present day superfluous and fastidious. We will content ourselves with presenting a rapid recapitulation of it. Those who may desire to be acquainted with the details of this controversy, will find them in the *Examen* of M. Broussais, in the *Mémoires* of Ducamp and of M. Roche, in the *Pyrétologie* of Boisseau, and in a great number of excellent theses sustained by the pupils of the professor of the Val-de-Grâce, on the nature of fevers.

We have already seen farther back, that intense irritations of all the organs were constantly transmitted at their commencement, to the brain, stomach, and heart, and that, the whole of the phenomena produced by the irritation of these three organs, taken together, constituted the febrile state, which, after some time of duration, may be kept up by that of the heart alone, when the brain and stomach have returned to their normal state.

These are the fevers authors have called *symptomatic*, when ever they have known the organ whose inflammation excites the febrile phenomena. It is difficult to conceive how they could admit at the same time the existence of fevers produced by a local lesion, and fevers dependant on a general affection of the economy, having no particular seat. The knowledge of the true nature of the former, ought to have conducted them to that of the latter, by leading them to the conclusion that there existed also other inflammations which they did not know, and the symptoms of which are precisely those of their *essential fevers*. An examination of the causes, phenomena, *post mortem* appearances, of the different modes of treating these affections, will prove to us that they are only groups of symptoms produced by inflammation of the gastro-intestinal mucous membrane.

1. All the agents which develop *essential fevers*, irritate directly or sympathetically the digestive passages, because all intense stimulations, affect finally their mucous membrane.

2. The debilitating causes ranked amongst those of fevers act also by irritating the stomach and intestines.

3. Stimulating agents never act at once on the whole economy, and there exists neither general stimulation, nor debilitation, as we have established at the commencement of this work.

4. All irritations are primitively circumscribed; it is only secondarily that disturbances are manifested in the action of a greater number of organs.

5. The greater part of the symptoms of *essential fevers* are those of all the phlegmasiæ.

6. Anorexia, disgust for food, alteration of the lingual mucus, redness of the point and borders of the tongue, are the premonitory symptoms of all *essential fevers*; the symptoms of gastric irritation are first brought into view; their intensity augments progressively, and almost always it is in relation with that of the general phenomena.

7. When the febrile phenomena are manifested before the symptoms of gastritis, there exists another inflammation which excited the fever and gastro-intestinal irritation.

8. Anorexia, disgust for food, thirst, redness of the borders of the tongue, sensibility or pain in the epigastric region, constipation or diarrhœa, and frequently vomiting, are the common symptoms of all *essential fevers*, as well as frequency of pulse, heat of skin and disturbance of the secretions. The signs of gastro-enteritis form then, as we may say, the element of all fevers. They present besides, one or two phenomena more prominent than the others, around which the ontologists have ranged these last, and which, to them, have been sufficient to characterize this group of symptoms. These predominating phenomena depend on, the constitution of the individual, the degree of irritation, the causes producing it, and the sympathies it awakens.

We refer for the development of this proposition, to what we have already said of the different forms of gastro-enteritis.

One of the physicians who sustains with most talent the physiological doctrine, M. Boisseau, whilst, acknowledging



that every febrile state is the result of local irritation, contends that all the *essential fevers* of nosographers, all those not accompanied by signs of inflammation *known to authors*, are not produced by gastro-enteritis; he excepts principally, *synocha* or *inflammatory fever*. He contends that we do not always discover amongst its symptoms those of gastric irritation, and that in these cases, notwithstanding the absence of every sign of inflammation of the skin, the articulations, the muscles, &c. synochus produced by insolation, a forced march, &c. is nevertheless produced by irritation of these tissues; and he reproaches M. Broussais for denying this, because it does not present the characters of phlogosis, whilst he himself has learned to seize on the most fugitive shades of irritations. Let us see how well this opinion is founded.

M. Boisseau asserts that the signs of gastro-enteritis, are not observed in all *inflammatory fevers*; he certainly will not give this name to the momentary acceleration of the circulation, to the heat of skin and the heaviness of head observed after forced exercise, and disappearing after a few hours repose; so slight a disturbance cannot be considered as a fever—it is exempt from all gastric irritation when it does not continue. But when the febrile state is really established, it is no longer the same; at least I can assert that; since I have learned to recognize gastro-enteritis, I have seen in all the synochas reputed essential, alteration of the lingual mucus, more or less redness on the point and borders of the tongue, very often thirst, and always inappetency or disgust for food, (incontestable signs of gastro-enteritis.) Who is ignorant of the fact, that fever does not exist without anorexia? But, according to M. Boisseau, inappetence is not an undeniable sign of gastritis; there must, he says, be disgust for aliments. I cannot see in these two signs any difference but that of degree; and moreover, when the stomach is healthy, it always gives rise to the desire for food—when there is inappetency, the stomach is then affected: but, according to this principle, admitted by Boisseau himself, it is affected with either asthenia or irritation, and no one will contend, that in synochus, the stomach can be debilitated.

Many physiological physicians have assured me that they have always observed the symptoms pointed out above, and, on reading attentively the pages in which the author of the

*Pyrétogie physiologique*, has sustained the contrary opinion, it has appeared to me that he had rather yielded to the authority of nosographers, than followed the results of his own experience: but M. Boisseau knows as well as any body, that the more transient symptoms of gastric irritation have not always been noted by the most exact observers, who could not attach to them great importance.

According to M. Boisseau, an irritation, not perceivable, no matter in what organ seated, may produce *essential (idiopathic) synochus*; but in order to produce fever, the irritation must rise to the degree of inflammation, and then it manifests itself by evident signs in the parts it affects, and it is no longer regarded as idiopathic. It should be recollected also, that every febrile irritation influences the stomach as well as the heart and brain. Here the gastro-enteritis is secondary, it is true; it did not produce the first febrile phenomena, but it nevertheless exists; it is then also true, that when even the *synochus* is the result of another irritation than that of the stomach, we observe always amongst its symptoms those of the latter, at least during the first period of its existence. These considerations determine me to admit with the professor of the Val-de-Grâce, the identity of the *essential fevers* of authors, and of gastro-enteritis. Moreover, the discussion, of which this proposition has for a long time been the subject, between M M. Broussais and M. Boisseau, appears to me to be more a war of words than a real difference of opinions. But let us continue the exposition of proofs of the non-essentiality of fevers.

9. Adynamia and ataxia are not as has been vaguely expressed, the results of debility, or of a morbid modification introduced into the vital action of the whole economy: the febrile state in which they appear, is composed of phenomena of irritations—it can never then have its source in debility.

10. The muscular prostration and other phenomena which have given rise to the belief of asthenia, disappear when the disease arises at a favorable termination, although no tonics have been administered and the patient has been restrained to absolute diet, depleted, &c.

11. The fever called *adynamic*, affects also, and even more frequently, robust, than debilitated individuals. It often comes on suddenly in the midst of most perfect health, after a table excess, the abuse of alcoholics, &c. in those

who present the most marked characters of strength ; it commences by a violent fever, pains at the epigastrium, vomiting, &c. The adynamic state is accompanied by great thirst, dryness of the mouth, burning heat of skin, &c. : all these signs of exaltation of the vital action should exclude the idea of feebleness.

12. Mucous and bilious superexcretion is the result of irritation of the gastro-intestinal mucous membrane and liver; for the functions of the exhaling and secreting organs cannot be exaggerated except in proportion as their vital action is more energetic.

13. In all the individual who sink under *essential fevers*, we meet traces of inflammation in the digestive passages, to a more or less marked degree, independently of those, the other organs may present, and which we meet always in the meninges, and sometimes in the brain itself. "How shall we answer," says M. Boisseau, "to persons who contend, that they find nothing in their examinations when death has terminated these diseases? that they have not seen, or that they have not wished to see; that they have badly seen, or that they have wished to see badly."

14. The identity of the lesions met with after the different *essential fevers*, shows that of their nature, and the inexactitude of their divisions.

Emetics and tonics often transform *embarras gastrique*, into *inflammatory* or *bilious fever*, and these last into *adynamic* or *ataxic*.

15. Most patients do not take tonic and stimulating medicines without repugnance, and often vomit them; on the contrary, they always desire cold drinks, acidulated or mucilaginous, and they take them with facility.

16. Stimulants exasperate most frequently the febrile symptoms, and it is, in almost all cases, only by spontaneous revulsions, that the patients escape injury from them.

17. Local bleedings, diet, and diluent drinks, if they do not unite always in preventing a fatal termination, diminish almost invariably, for a longer or shorter time, the frequency of pulse, heat of skin, the thirst, dryness, redness of the tongue, and sensibility of the epigastrium. It is a fact which all physicians (who treat the pretended essential fevers according to the principles of the physiological doctrine) have observed a hundred times.

18. In intense fevers, patients seek fresh air; they un-

cover their breasts and epigastrium, and the application of cold to the latter region relieves them.

19. Finally, it is incontestable, that by the antiphlogistic treatment a greater number of fevers are cured than by emetics, purgatives, tonics, and stimulants.

Let us now present the objections, by the aid of which they have endeavored to overturn the new pyretological doctrine.

1. They have contended that most of the causes of fever acted on the whole organism, and they have cited principally atmospheric vicissitudes, the retention of the principles of pulmonary and cutaneous perspiration, when cold prevents the action of the skin, deleterious emanations, and other principles which absorption may introduce into the circulation.

All these causes act at first only on a single organ, and it is only by the sympathies which inflammation puts in play, that they determine the irritation to extend itself to the other organs. Thus, the action of heat and cold on the skin influences only the gastric or pulmonary mucous membrane or the organs of secretion. Retention of the principles of perspiration does not cause diseases; but the suppression on the action of the skin, is replaced by the superexcitation of another organ, and the latter may rise to the degree of irritation. Morbific agents introduced into the circulation only exercise a limited action also. Thus, the virus of the vaccine only causes the eruption of a few pustules, that of variola produces at first a gastro-enteritis, whose progress may be followed in all its degrees, and in the development of its sympathetic and local phenomena. Deleterious miasms irritate, either the gastric mucous membrane, brain, or lungs. All these agents limit then their action to one or two organs, and we ought not to be more surprised at this than to see tartar emetic and gamboge when introduced by cutaneous absorptions, irritate exclusively, the first the stomach, and the second the large intestine.

2. They object that all the causes of fever are not stimulating—that there are some debilitating ones.

If we read the causes assigned by authors to *essential fevers*, we see that they are all those of gastro-enteritis. We remark also, that these are almost always the same for every fever, that nosographers however, do not attribute all cases to debility, and in many of them they recognize on the con-



trary the phenomena of irritation ; from whence it results, according to them, that the same agents will sometimes produce asthenia, and at other times superexcitation.— Moreover, some causes are regarded as debilitating, only because they produce weakness of the muscular system and of the vessels of the surface, whilst they at the same time stimulate the viscera. Such are, residence in prisons and camps, depressing moral affections, inaction, uncleanness, the use of damaged provisions, excessive coition, long watching, &c. Amongst the *debilitating* causes placed by authors in the etiology of fevers, there are some which are truly so— but these do not produce the disease ; only, by weakening the sanguine system, they give more energy to the lymphatic system, and thus predispose to the mucous form of gastro-enteritis (*fièvre muqueuse*.) Such are, residence in marshy places, in damp habitations, sanguine deperditions. But, again, these are not the influences which have produced *the fever*. M. Roche has very judiciously observed, that the etiological table of fevers attributed to debility, has not been traced from observation of the causes of these diseases, but from the theory formed *a priori* of these latter. They had declared them essentially asthenic, and it was then necessary to assign causes which should be in harmony with their supposed nature. Therefore, by allowing to figure amongst the causes of *adynamic fever*, irritating influences already placed in the etiology of *bilious fever*, which they do not attribute to asthenia, they have retrenched those evidently stimulating ; such as the abuse of wines, of coffee, of alcoholics, excess in eating, extensive inflammation of the skin, the suppression of eruptions, &c. which are constantly seen to produce *adynamic fever*, and they have substituted for these, a cloudy, humid air, the abuse of blood-letting, scanty nourishment, which have never produced this disease. It is also for this reason that they have pointed out old age and a weak constitution, as predisposing causes, whilst the disease is infinitely more frequent in adult age, and in robust individuals.

3. Fever is composed of general phenomena ; it cannot then have a local seat ; it consequently constitutes a general disease.

The adversaries of the new doctrine incessantly complain of the reproach of *ontology* with which we are often obliged to address them, and their objections, notwithstanding, are

as much tainted with it as the principles which they defend. In the first place, it is not true that the symptoms of fever exist throughout the whole economy ; many organs preserve their integrity. But, even if this were the fact, is it the symptoms which constitute the disease, or are they not rather the consequence of the latter, that is to say, of the lesion of an organ ? No one certainly, of the present day, would dare to sustain the first of these propositions, and it is, nevertheless, on this, the objection we refute reposes. The loss of sensation and voluntary motion produced by apoplexy, are phenomena quite as general as those of febrile gastro-enteritis. Will you say then, that apoplexy is a general affection ? will you say also, that the seat of hepatitis is at the same time in the liver, the skin and the right shoulder, because often, in this inflammation, the former is yellow and the latter painful ? If you persist in considering as diseases, the modifications of action which one part experiences from the influence of the lesion of another, you only dispute about words, and this dispute is not only idle, but it is subversive of all medical doctrine. When we investigate the causes and symptoms of a disease, it is only for the purpose of discovering which is the diseased organ, and in what manner it is affected ; and our sole object in endeavoring to ascertain these facts, is to decide on the choice of treatment. It is not then at the symptoms that we should stop ; we should only study them in order to discover the source from whence they arise, in order that we may not substitute them for the disease, and oppose to each one a peculiar treatment, as has hitherto been done.

4. They maintain also, that the disease is general, even when there exists a more marked affection of one of the organic systems, and they allege as a reason, that in *inflammatory fever*, for example, the sanguine vascular system may very well be irritated in all its parts ; and that, since its divisions penetrate every where, the general affection of this system is that of the whole economy.

To contend that the sanguine capillary vessels are irritated in inflammatory fever, it is necessary to have established their irritation. Now, what are the phenomena by which is manifested that of the red tissues ? the signs of inflammation ; why then, as M. Broussais has objected in the first *Examen*, are not all the parts red, tumefied, painful,

in synochus, if it be the result of irritation of the whole sanguine vascular system?

5. If there exist some predominant symptoms appertaining to the brain, to the lungs or to the digestive organs, they indicate only that certain organs are more affected than others, because in a general disease the most sensible parts must be more affected than the others.

We might at all events sustain this proposition if the lesion of different parts was manifested at the same time in all of them; but when symptoms of the affection of one organ precede those of the alteration of the others, it is impossible to mistake the part which the first plays in the development of the general phenomena. It is thus that pain and tumefaction of the abdomen in peritonitis, that pungent pain and dry cough in pleurisy, teach us that the fever is only a result of inflammation of the peritoneum and pleura—local diseases which were *formerly essential fevers* like gastro-enteritis and other phlegmasiæ, and whose nature pathological anatomy has demonstrated.

6. The local symptoms referred to gastro-enteritis depend on a peculiar morbid state of the stomach, and if they are sometimes produced by irritation of this viscus, it is not an irritation of the same nature as inflammation.

The symptoms of the affection of the stomach, are attributed to its inflammation, because the existence of the latter is demonstrated by the mode of action of the causes of the disease, by the analogy of its phenomena with those of all the phlegmasiæ, by the alterations it leaves in the dead body, and by the effects of stimulants and demulcents.—What then is this attempt to overturn a principle established on the most solid basis, by the most arbitrary suppositions? What is this *peculiar morbid state*? What, is this irritation *sui generis*, different from inflammation? What are the facts demonstrating their existence? It would have been necessary to resolve all these questions before denying that the gastric symptoms depend on inflammation.

7. The muscular prostration, the stupor and disturbance of the functions point out evidently, debility or ataxia of the vital action. How can we conceive that disorders developed in a short space of time, in the most robust individuals, under the influence of causes manifestly irritating, characterized, in the greater number of organs, by the strongest signs of excitement, viz: burning heat of skin.

thirst, dryness of mouth, frequency of pulse, delirium, agitation, &c. which antiphlogistics calm, and which stimulants exasperate, can recognize for their cause a profound blow at the forces of the organism? Muscular prostration is joined to most of the intense inflammations, especially when the brain is irritated; the lesion of this viscus and of the meninges account for the stupor and disturbance of the functions. As to the idea of *ataxia*, it results from this, that they have considered only the disturbance of function, without examining the modifications undergone by the action of the organ executing it. The latter can only be changed in degree; for nothing proves that it undergoes other alterations. Ataxia then is only relative to the functional result, and the disturbance of the nervous functions depends only on an encephalic irritation.

8. They contended, at the origin of the physiological doctrine, that there rarely existed alterations in the bodies of individuals who had died from *essential fevers*.

No one at the present day would dare to support this assertion, so evidently contrary to the numerous facts collected every day by all physicians who make autopsies. They also now agree that, in almost all cases, alterations are found in the digestive canal; redness thickening, of the mucous membrane, or ulcerations. These lesions are the result of inflammation; so then, in almost all cases, according to the acknowledgement of our adversaries, the febrile symptoms should be the result of gastro-enteritis.

9. But, say they, these alterations are not the result of inflammation—they are produced by *asthenia*, or by the presence of *fæcal matters*.

They should not refute the first supposition before they have demonstrated to us that redness of the tissues, thickening and ulceration can be produced by *asthenia*. Until this is done, the hypothesis is too absurd to merit a refutation.

We find ulcers when patients have been affected with diarrhoea, as also when constipation exists; we sometimes meet with them in the stomach, where there is no *fæcal matter*; and supposing even that these lesions are the result of the cause assigned to them, which is nothing less than proved, we would still have to acknowledge that these matters could not ulcerate the mucous membrane, except by irritating it, and that these alterations are the result of in-



flammatory action. But this inflammation has had several periods to pass through; it necessarily has been of some days duration; it has excited symptoms, &c. This etiology of *post mortem* lesions, if it were true, would prove precisely the contrary of what they have wished to establish.

10. These alterations are often too trifling to account for such serious accidents.

We have already anticipated this objection, when we remarked that death was not the result of local disorders, in gastro-enteritis and in inflammation of most of the other organs, but that it was produced by the sympathies exercised on the more important organs of life—those whose action cannot be for a long time disturbed without producing death. If the latter can be produced by an angina, a pneumonia, a pleurisy, a peritonitis which leave but slight traces in the dead body, why should not the same thing hold in inflammation of the stomachs, which plays so important a part in the economy, and which maintains such close connexions with the brain and heart? Besides these alterations are not faithful indexes of the lesion which existed during life, because they may have lost much of their intensity.

“What,” says M. Boisseau, “is this singular disposition of mind which induces them to deny the fatal influence of a vital lesion, because they do not find it entire in the dead body, and which induces them to accuse organs of being in fault, in which no trace is found, of disease, instead of attributing death to those in which disease is found.”

11. Redness of the intestines which is often the only trace which *essential fevers* leave, may exist without producing disturbance in the functions; for we meet it in persons executed and those who have died by accident.

But they tell us nothing of the anterior state of these individuals, and this should be established. We are then warrantable in supposing the existence of a chronic gastro-enteritis, or of an irritation suddenly induced in these individuals; and this supposition will appear plausible to all those who will reflect on the circumstances in which these individuals are, for a long time before they are led to execution. As to those who have died from accident, I repeat it, we know nothing of the anterior state of their health, and the only fact reported on this subject by M. Chomel, which is taken from M. Lherminier, can prove nothing for or against the opinion we discuss. I opened the body of an

individual killed in a duel seven or eight hours after eating : the mucous membrane of the stomach and intestines was pale throughout its whole extent. M. Boisseau has found it red in individuals who had died in the same manner, after having committed excesses in drinking. Individuals who go to execution, are ordinarily in the same predicament.

12. Some physicians contend that the inflammation which supervenes in the digestive passages of persons affected with severe fevers, is of a nature essentially gangrenous, like carbuncle and malignant pustule, and that like these it exacts the employment of tonics.

In order to be authorized in sustaining this opinion, it is necessary to prove that *adynamic fever* is always produced, like the affections to which they are compared, by deleterious agents, whilst patients are very rarely submitted to their influence ; and that gangrene of the mucous membrane is constantly observed after this disease, whilst it is extremely rare.

13. Finally, to cut short the discussion, they have sustained that the alterations met with in the bodies of individuals who have died of violent fevers, were the effect and not the cause *of the symptoms which characterize it*.

Fever is a being or an abstraction ; the physicians who sacrifice most to ontology, repel the first supposition, the ridicule of which they feel. If the word fever be an abstract expression, designating a group of symptoms, it is not less absurd to maintain that it is the cause of the alterations of the digestive mucous membrane: for this is nothing less than to assert that an abstraction may produce an effect. Do blackness of the tongue, delirium, stupor, muscular prostration, lividity of the skin, &c. *symptoms which characterize adynamic fever*, produce lesions of the digestive canal? Why not then attribute also to the fever of pneumonia and pleurisy, hepatization of the lung and thoracic effusion? In fine, if by *fever* is understood a particular disease *sui generis*, these lesions prove always that it had its seat in the digestive passages, since we never meet with lesions in the other organs, except in cases where the disease is complicated. Now if we find that these lesions are those which all inflammations produce, that the causes of the disease and its symptoms are those of inflammations, that the local symptoms appertaining to the digestive organs

evince themselves before the general phenomena, we must necessarily conclude that the affection of the digestive passages is an inflammation, and that this is the cause of all the symptoms constituting the fever.

14. In some cases no changes are found in the dead bodies.

These cases are so rare that the adversaries of the new doctrine have had great difficulty to collect a few examples in the space of several years, and these are far from confirming the opinion they sustain ; we know, indeed, that inflammations, very evident during life, have not left any traces after death ; this fact is substantiated by the most exact observers ; and besides, if all the proofs brought forward by the physiological doctrine, against the essentiality of fevers, establish in the most satisfactory manner, that the symptoms constituting them depend on inflammation of the gastro-intestinal mucous membrane—we must necessarily acknowledge its existence whenever we meet the phenomena which observation and *post mortem* examinations have taught us appertain to it.

15. The best practitioners have established the bad effects of blood-letting in most fevers.

Granted : but it is only of phlebotomy they speak, and never of capillary bleeding, which was not employed in the treatment of fevers before M. Broussais ; and we have said in another place, that the effects of these two modes of bleeding were very different in membranous inflammations.

16. The advantageous effects of tonics and stimulants prove that adynamic and ataxic fevers are not the results of an inflammation.

What is the method of treatment, no matter how vicious, which does not also lay claim to cures ? Those who treat peritonitis, pleurisy, and pneumonias by tonics, also allege cures as a justification of this method. In order to resolve the objection now before us, it is no longer necessary to recur to arguments—we have only to consult figures ; it is of no importance to know whether they have cured *essential fevers in spite of* or *with* tonics, but whether they cured more by these means than by the antiphlogistic method ; and every one knows that in the hospitals, seven twelfths at least of the fevers treated by tonics die. How dare they then vaunt a method of treatment not curing even the half of the patients. “ You wait then,” asks M. Roche, “ until there does not

-escape one, before you begin to doubt the beneficent virtues of your admirable specific? You would do well to renounce this course, if it only gives you death as a result."

All those who have followed the practice of the professor of the Val-de-Grâce, and of other physicians who have adopted his principles, know that *most fevers* are arrested at their commencement by antiphlogistics; that under their influence it is *extremely rare* to see *bilious* and *inflammatory fevers* become *adynamic* or *ataxic*; and finally, that they cure also many of the latter by debilitants, judiciously united with revulsives. Every one knows also, that these transmutations are very frequent, on the contrary, in the practice of Brunonians.

Let our adversaries put in operation the application of the principles of the physiological doctrine, and the comparison of results they will obtain, with those which humoralism and Brownism furnish, will soon convince them of the excellence of the former, and of the absurdity and danger of the latter. If their conscience does not permit them to make experiments which they think dangerous, let them not disdain at least to witness the practice of physiological physicians, and to consult their clinical reports.

This grand contest is not about speculations, vain theories, indifferent to the happiness and misery of humanity; its object is to her dearest interests. We declare to physicians an error producing death; we warn them of it; let them not believe without examining; but honesty imposes on them the rigorous duty of enlightening their judgments.

Such are the objections with which they have attempted to overturn the new doctrine of fever. They all sink into arbitrary hypotheses, and denials of the most evident facts; we have seen that not one of them can stand the test of criticism. It is not by such means that we can overturn principles deduced from well established facts, and the most rigorous reasoning. Instead of making advances on the grounds of their adversaries, the partisans of the essentiality of fever are always shut up in the vicious circle of ontology, thus preferring speculations, to opinions proved even to demonstration, vagueness to certainty, and finally, if we must say so, absurdity and error to truth and reason.

Before we conclude, we should also examine for a moment intermittent fevers. We have established in another place, the intermittence of irritation, and we then saw that au-



thors had called by the name of *malignant fevers*, intermittent inflammations in which violent congestions take place : and that they had qualified them with the name of the diseased organ, the signs of its inflammation were recognized, whilst they characterized them by one of the most prominent symptoms, (like their continued fevers,) when they saw no sign of local affection—such are *cold fevers*, *syncopal fevers*, *cardialgic fevers*, &c. ; that they had named those in which the symptoms were moderate, and in which they discovered no local lesion, *common intermittent fevers* ; and finally, that they had qualified with the name masked fevers (*fièvres larvées*,) intermittent apyretic irritations, not thinking that there were other diseases besides *fevers*, which could put on the intermittent type. We have established also the non-essentiality of ordinary intermittent fevers ; it only remains then for us to speak of their seat. According to M. Broussais, these affections, as well as remittent fevers, are periodical gastro-enterites. He admits besides, that the encephalon and other viscera, are sympathetically irritated, the same as in the continued, and may also become the principal seat of irritation. The following considerations cannot leave any doubt with regard to the exactitude of this opinion.

1. M. Pinel regards *intermittent fevers* as of the same nature as essential fevers, and by this judicious reconciliation he prepared the discovery of their seat.

2. Most authors are not agreed in placing the seat of intermittent fevers in the digestive passages and their appendages.

3. We often see intermittent fevers become *bilious*, *adynamic*, and *continued fevers*, and reciprocally bilious and mucous fevers transformed into periodic fevers.

4. Most of the causes assigned by authors to intermittent fevers act on the stomach directly or sympathetically.

5. A paroxysm of intermittent fever presents all the phenomena of a continued fever.

6. Anorexia, disgust, disposition to vomit, sensibility and sometimes pain in the epigastrium, are the first symptoms of the paroxysm. These symptoms, and in addition, thirst, redness of the tongue, aversion from stimulating drinks, desire for cold aqueous drinks, and sometimes vomiting, are seen during the hot stage. And we know that all these symptoms belong to gastro-enteritis.

7. Practitioners have discovered the necessity of antiphlogistics, and the danger of stimulants during the paroxysm.

8. They have observed also, that bark, administered before restricting the patient to diet, and submitting him for some time to an antiphlogistic treatment; when the gastro-enteritis is not perfectly intermittent, and the patient preserves between the paroxysms, some signs of gastric irritation; when there is even complete apyrexia, would very often exasperate the disease, render the fever continued, and make it sometimes pass into the adynamic or ataxic state.

M. Broussais has frequently observed these circumstances in Spain, at a period when he attacked intermittent fevers from their commencement, with tartar emetic and bark. We know also that intermittent fevers, when treated by stimulants, frequently leave in their train, (especially in cases where patients have not previously used the precautions we have just pointed out,) dyspepsias, hypochondrias, and other morbid phenomena which we know appertain to chronic gastritis, and chronic hepatitis, which is always united also to the latter.

9. A great number of intermittent fevers, the half, according to M. Broussais, yield to bleeding from the epigastrium, diet and demulcent drinks. We will return to this fact when we speak of the treatment.

10. The intermittence of irritation and the perfect identity of continued and intermittent fevers being demonstrated, it results necessarily, that ordinary essential fevers are intermittent gastro-enterites.

11. However, in the same manner as the irritation of all the organs may produce a continued fever, it may also produce a simple intermittent fever, as well as a malignant fever; but it is incontestable, that the stomach participates very often in the irritation. Is this deuteropathia as constant as in those continued fevers which have not their primitive seat in the digestive passages? It is probable that the duration of the intermittent phlogosis being short, its influence does not extend always to the stomach. But we do not possess a sufficient number of cases on this subject to be able to decide this question. When intermittent fevers shall be studied for some time yet in their true point of view, these difficulties will be resolved.

12. We should not be astonished to see that the gastro-

intestinal phlogosis exists more frequently under the intermittent type than the other irritations. In the first place, gastro-enteritis is the most frequent of the phlegmasiæ, next the stomach is one of the organs most submitted to intermittence of action in the healthy state, and finally, it is on this organ that act most of the causes whose intermittence of action M. Roche has so well established.

If we recapitulate what we have said on the febrile state we will see that—

1. Fever is the result of an irritation of the heart.
2. It may be produced by the irritation of any organ, elevated to the degree of inflammation.
3. The latter stimulates sympathetically the heart, the brain, and the digestive mucous membrane; and each one of these organs experiences this sympathetic irritation in different degrees.
4. The gastro-intestinal inflammation often becomes predominant; so does that also of the brain; and then, in the language of the ontologists, an essential fever complicates the symptomatic fever.
5. All the essential fevers of authors are groups of symptoms produced by inflammation of the mucous membrane of the stomach and small intestines, simple or complicated with another irritation.
6. The differences of fevers depend on the different forms assumed by gastro-enteritis.
7. The sympathetic irritations provoked by gastro-enteritis, may acquire great intensity, and become predominant. The latter then continues or diminishes, and new symptoms are added to those of the primitive inflammation, or supercede them.
8. Intermittent fevers are periodical febrile inflammations.
9. Ordinary intermittent fevers are periodical gastro-enterites, most frequently primitive, sometimes sympathetic; perhaps they are produced in some cases by irritation of some other organ, without complication of gastro-enteritis.
10. Malignant fevers are intermittent inflammations of the lungs, pleura, brain, intestinal canal, &c. during the exacerbations of which the irritated organs are the seat of a very active congestion.
11. Masked fevers (*fièvres larvées*) are inflammations, hemorrhages, neuroses, or periodic and apyretic sub-inflammations.

## CHAPTER V.

## TREATMENT OF INFLAMMATION OF THE DIGESTIVE MUCOUS MEMBRANE.

If empiricism has sometimes preceded theory in the discovery of the treatment suitable to diseases, observation had done nothing until lately for that of the disease now before us. All the shades of gastro-enteritis had been badly treated until the time of Broussais; whether opposed by tonics, stimulants, emetics, and purgatives, or combatted, in a few cases, by antiphlogistic means, different from those which perform cures.

We see indeed, authors agreed in prescribing emetics and bitter drinks, in *bilious fever*, and *mucous fever*; tonics and stimulants in *adynamic* and *ataxic fever*; purgatives, emetics, and tonics under different names, in all shades of chronic gastritis; astringents in colitis, &c. In some few cases where gastritis was recognized, they prescribed *general* bleeding, demulcent drinks, *broths*, &c. The improper application of revulsives is often made to add to the fatal effects of irritants. In fine, we are forced to acknowledge that, of all the therapeutic methods opposed to the multiplied forms of gastro-enteritis, the expectant plan and respect for crises, (which we should throw aside at the present day, since we have learned how to treat this disease,) was the least deplorable.

It would doubtless be superfluous to say, that it is to M. Broussais we owe all the principles of the treatment of gastro-enteritis; for it belongs to the observing genius who has changed the face of medicine by the discovery of this disease, to teach us how to cure it. I will here expose the principles he has given on this subject, by recapitulating what I learned from his lectures, his works and his practice, which I have followed during several years.

In the treatment of gastro-enteritis, as in that of all diseases, the first care of the physician should be to remove the patient from the causes producing it, and from those which keep it up or aggravate it. Though this is easy to do generally, in the acute stage of this disease, it is not in the chronic; the depressing moral affections, the indocility of patients, the continual fear of losing their strength from low diet, the momentary pleasure they feel from stimulants, the



indiscreet kindness of those around, are so many circumstances opposing the efforts of the physician.

When the first symptoms of the disease show themselves, we should make an effort to arrest it at once. If the appetite be greater than usual, we should indulge it with moderation, and instead of taking a greater quantity of food, the person should be confined to vegetables and water, or a very small quantity of wine. If the appetite be diminished, as is most commonly the case; if the individual experience uneasiness after eating, an unusual heat, thirst, &c. he should be restrained to soups, vegetables, eggs, rice gruel, water for drink, and should use lemonade or sweetened water between meals. By this plan, we arrest the greater number of gastric irritations at their commencement, and most men, if they could submit to it, would escape the danger; but as soon as they feel their appetite diminish, they have recourse to bitters, and if two days after they have not obtained the desired effect, they take an emetic, especially when a foul state of the tongue, bitterness of the mouth, and a sense of fullness at the epigastrium, have made them pronounce the name of *embarras gastrique*. In this degree of gastritis, an emetic often succeeds, but, in a still greater number of cases, it exasperates the irritation and makes it rise rapidly to a more elevated degree. We then often see its administration reiterated, notwithstanding the evident exasperation the disease has undergone; bitter drinks are now made to add to its effect, and at the least appearance of debility, they are replaced by the strongest tonics and stimulants.—By this method they transform the *embarras gastrique* into *bilious fever*, and this into *adynamic* and *ataxic*; that is to say, that they add gradually to the intensity of the irritation, and that they light up violent inflammations too often irremediable, and which would hardly ever be developed if the patient had been treated from the beginning, by antiphlogistics.

Emetics should be banished, in almost every case, from the treatment of irritations of the digestive mucous membrane; M. Broussais has entirely renounced them for several years past. We grant that they often produce rapid cures; but a hundred cures are bought too dear by the death of one individual, when we can recur to a method not always so promptly efficacious, but always successful, and never producing any bad consequences. Besides, the good

effects of emetics are not so numerous as we have just supposed them ; and we are not afraid of exaggerating, when we say, that the cases in which they aggravate the disease, are at least, in the proportion of one to ten. Those who advocate emetics boast loudly of their cures, and are silent on the bad effects they produce ; perhaps they are honest. The principles they have adopted prevent them from attributing the evil consequences they see, to the treatment.— If they were not blinded they would except amongst the fortunate causes, 1st, those in which the gastric irritation, without passing to an elevated degree, is however, sensibly exasperated ; for they often see after their administration, the appetite completely disappear, and thirst replace it, the tongue becomes more foul and red on its borders, the skin dry, &c. ; 2d, those in which the pretended essential fevers succeed to the first phenomena of gastritis ; 3d, finally, the numerous cases in which the state of the patient is ameliorated for two or three days, and after which the *embarras gastrique* reappears ; and those in which this momentary amelioration is soon followed by signs of chronic gastritis.

The bile and mucous fluids vomited did not exist before the administration of the emetic, their secretion has been increased by the stimulation it exercised on the stomach, and transmitted to the liver ; and in supposing that a quantity of these fluids already existed in the stomach and irritated the mucous membrane, they doubly fail in the end which they propose, by administering an emetic, since it must increase the irritation and produce a more abundant secretion of bile and mucosities. This in fact takes place, and if this exasperation be often exempt from dangerous consequences, it is because the stimulation of the stomach produces in the skin an extraordinary action inducing diaphoresis, and consequently revulsion of the gastro-intestinal irritation. As the effects of emetics are very uncertain, even in the mildest grades of irritation, as they do not effect a rapid cure except in very few cases, as in most cases individuals do not recover more promptly than by following another mode of treatment, and as they sometimes exasperate the irritation and give rise to an inflammation too often fatal, they should be proscribed almost invariably in the treatment of gastric affections. They are generally advantageous when the irritation is very slight, when it is recent and when it has not been preceded by chronic gastritis :

when individuals are fat, lymphatic and not irritable; in cold and damp seasons and countries; when the tongue is covered with a mucous coat, and when its borders and point are not red; when the epigastrium is not sensible; when the heat of skin and thirst are not augmented; when the patient has no organ affected with chronic inflammation. But there is no doubt that even in cases the most favorable to the administration of emetics, it is still most prudent to abstain from them; for we are not even here beyond the reach of accident. I possess three cases justifying this fear. In two individuals I have seen emetics give rise to very intense gastro-enteritis; in a third, placed like the two others under all the circumstances just pointed-out, I thought that I might prescribe an emetic; unconquerable vomiting came on, a more acute inflammation was developed, and in spite of the most active antiphlogistic treatment, it continued its progress, and the patient sunk on the sixth day, with the symptoms of *adynamic fever*. I did not have it in my power to open the body; but the patient had always enjoyed good health, and I was well assured that he did not carry any point of chronic irritation about him.

These reasons then should decide practitioners to prefer to a method often advantageous, it is true, but sometimes dangerous, a mode of treatment which can never leave cause of regret.

Whenever an individual presents himself with the premonitory symptoms of gastro-enteritis, it is necessary at once to restrict his diet, to allow him only veal broth, chicken water, cooked fruits, if he still have appetite, and to give him for drink lemonade or other like preparations. If the patient be sanguine, and the heat of the skin be augmented, we should not confine ourselves to these means; the application of eight to twelve leeches on the epigastrium, will arrest more certainly the commencing phlogosis. This treatment almost always restores the health in two or three days, and if sometimes it does not succeed in arresting the irritation, it prevents it in almost all cases, from acquiring a great degree of intensity.

When the fever is already declared, it is necessary to apply a greater number of leeches; this quantity is determined by the intensity of the inflammation, its duration, age, sex and state of the sanguine vascular system. In adults, who present gastro-enteritis under the inflammatory

or bilious forms, it is also necessary to apply thirty or forty leeches, and to be cautious in stopping the flow of blood, which, on the contrary should be promoted by emollient fomentations.\* When leeches are used in too small a number the irritation is calmed for some hours, but it most frequently returns with its former intensity, and the weakness experienced by the patient is so much loss. It is necessary to let the blood flow until the pulse loses its frequency and becomes soft, until the heat of skin diminishes, this membrane becomes moist and the face loses its color. Many circumstances produce on this precept modifications important to be known. In individuals having little blood, and in those who have been affected for a long time with chronic gastro-enteritis, we should be very moderate in the application of leeches; an abundant sanguine evacuation would throw the patient into a state of debility which it would take a long time to recover from, and which would be the more dangerous in proportion as the viscera are actually the seat of congestion, which debility favors. We should only bleed in these cases when the pulse is hard and resisting, and when the face is florid; it is then necessary to confine ourselves to a smaller number of leeches than that we have indicated, and to arrest the flow of blood when the state of the pulse and heat of the face announce that it cannot be pushed farther with impunity. If the pulse, notwithstanding its frequency, have no hardness, if the skin be colorless, if the *enbonpoint* be much diminished, if, before the disease the subject was feeble, it is more prudent to abstain from blood-letting, local and general, and to confine ourselves to the employment of other means. In young persons, women and old persons, when even they are not under the circumstances pointed out above, we should also practise local blood-letting with more moderation; for if it be important to occasion a loss of blood sufficiently abundant to produce resolution of the inflammation rapidly, it is not necessary, notwithstanding, to throw the patient into a debility which retards convalescence and favors the establishment of chronic inflammations.

The employment of leeches on infants, exacts the greatest circumspection and the closest watching; we should never apply but a very small number, even when they are

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\* The leeches of this country (United States,) should be applied in much greater number—from fifty to eighty will be required.—Tr.



strong and the gastro-enteritis intense, because the capillaries of the skin are highly developed in early age, and the bites of leeches often furnish a great quantity of blood; we have seen infants perish bloodless because the cutaneous hemorrhage had been abandoned to itself. The physician who orders leeches to be applied to an infant should watch over it himself, and visit the child three or four hours after the application, in order to be assured that the state of the pulse and paleness of the skin do not call for an arrest of the flow of blood. It is not only in infants that we should fear the accident we are speaking of; we observe it in young persons and in adults having very delicate skins. A young robust soldier, in 1820 entered the hospital Val-de-Grace, affected with a slight gastro-enteritis; the day after his entry Dr. Damiron prescribed fifteen leeches to the epigastrium: the blood flowed abundantly and the nurse had twice to change the cloth applied. In the evening the patient complained of being weak; but the attending surgeon was not apprized of it, and the nurse gave himself no farther trouble about the young man during the night. At five o'clock in the morning, he was found dead; an enormous quantity of coagulated blood covered the abdomen and bed cloths. On opening the body we found all the tissues pale and the veins empty. The examination of the brain, of the thoracic and abdominal viscera, discovered no alteration, and it was evident that the patient had died from hemorrhage.—M. Damiron informed me that he had witnessed a similar instance, in an individual aged about twenty five years.

When the first application of leeches does not produce in the space of fifteen or twenty four hours, a very marked amelioration, when the pulse still preserves its frequency, when the skin is hot and dry, the epigastrium sensible, the thirst intense, the mouth dry and the tongue red on its edges, it is necessary to repeat the application of leeches. We are sometimes obliged to recur to them a third or a fourth time. This perseverance is indispensable to arrest the inflammation, and I have seen it a number of times, in the practice of M. Broussais, crowned with the most happy success.—The debility is not so great, after these repeated sanguine deperditions, as one would suppose, and convalescence is not so tedious as has been asserted by the opponents of this practice who have never seen it put in force. The debility is much more profound, when the disease has been allowed to march on, or has been exasperated by tonics.

Often after an amelioration of one or several days, we see the first symptoms reappear with the same intensity ; it is then necessary to recur to leeches as in the first instance. But often it is necessary to renounce their employment before obtaining the amelioration desired, because, far from diminishing the intensity of the inflammation, they only add to the danger. M. Broussais advises us to abstain from blood-letting when the inflammation has been preceded by a chronic inflammation, when it has lost none of its intensity after the first application of leeches, and when the pulse loses its force while it retains its frequency ; when several organs are inflamed at once, and to a great extent ; if the anguish, prostration, and frequency of pulse be extreme ; “ we might evacuate all the blood,” says he, “ sooner than arrest the disease.” The author of the *Examen* advises us also to be very circumspect in the employment of blood-letting when typhus is not in its commencement ; because, whilst producing inflammation in the viscera, the gaseous poison weakens the vital power to such a degree that the losses can no longer be repaired.

In a former chapter we have sufficiently insisted on the superiority of capillary over general bleeding in the treatment of membranous inflammations, to excuse us from returning to it.

We should only recur to phlebotomy when the inflammation gives rise to a high degree of excitement in the sanguine vascular system and when the disease is at its commencement, or when the gastro-enteritis accompanies a pneumonia, or when the blood is carried with force to the brain ; but in these cases, capillary bleeding practised on the epigastrium is not less necessary to combat the gastro-intestinal inflammation.

We have said that as soon as the first phenomena of this disease are manifested we should forbid the use of aliments, and only allow patients broths ; but when the fever is lighted up, the diet should be absolute. M. Broussais is the first who forbid broth in febrile gastritis, and conformity with this precept is of the greatest importance to the success of the treatment. How often have we not seen a few spoonfulls of this preparation, administered when the patient was already better, suddenly reproduce the former symptoms ? M. Broussais extends this proscription to all fluids requiring digestion, such as decoctions of farinaceous grains

and fleshy (*charnus*) mucoso-sacharine fruits. He says we should only allow for drink, water charged with a small quantity of sugar and gum tragacanth, which is preferable to gum arabic on account of the extractive matter often coloring the latter. The solution should only contain sufficient to be slightly unctuous to the touch; when gum cannot be obtained, flax seed, or *althæa officinalis* may be employed. We should renounce mucilaginous plants containing an aromatic principle. Drinks made of gums are preferable to all others; many patients, however, prefer the acidulated; we then give weak lemonade, prepared from lemon, or syrup of gooseberries or raspberries, largely diluted with water; if these cannot be got conveniently, tartaric acid may be used, which should be very much diluted. Acetic acid always produces irritation, even when the water is scarcely acidulated; we should then renounce oxycrate and syrup of vinegar, as well as the mineral acids; the same with sirop of mulberry, the acid of which is very pungent. If acid drinks provoke coughing, we should substitute mucilages. It is better to administer both cold, particularly in the summer or when there is vomiting; warm fluids stimulate the stomach; the existence of cough, however, requires that they be taken warm. The patient should not drink more than his thirst demands; and he should not take a large quantity at a time; for then it accumulates in the stomach, distends and fatigues it.

Later in the disease, when it is on the decline, when the tongue becomes cleaner, and the patient has appetite; and especially if he has been dieting for a long time and is much weakened, we give nourishing drinks. For the former decoctions of barley, we then substitute apples, bread, sweetened and slightly aromatized with orange water, diluted milk, &c.; and when the frequency of pulse disappears, chicken or veal water, and beef broth, as convalescence is declared.

Several topical applications are of very great utility in the treatment of gastritis. We will place in the first rank, emollient fomentations on the epigastric and umbilical regions. They should not be applied of too high temperature, for fear of stimulating the skin. When the inflammation is very high and there is a great deal of heat, if the individual be not too much debilitated, and he seek cool air, we should prefer cold applications. We then place on the epigastrium

a bladder filled with ice or very cold water, which should be renewed as soon as it becomes warm. If the lungs or pleura be irritated, M. Broussais advises the thorax to be covered with a warm cataplasm for the purpose of diverting from them the action of the cold; and if, notwithstanding this precaution, the cough be exasperated, he renounces this means.

Cold on the abdomen is very efficacious under the circumstances laid down; it often dispenses with the reiteration of blood-letting, and M. Broussais advises its employment, especially in the summer, and in the treatment of the gastro-enteritis of warm climates.

The revulsive method is but a feeble resource in the treatment of acute inflammations of the digestive mucous membrane, and most frequently it is very injurious. M. Broussais has often pointed out the dangers of using vesicatories, which, before him, played so important a part in the treatment of violent *essential fevers*. The cutaneous inflammation produced by them is not sufficiently high to cause a revulsion of an inflammation occupying a great extent: most frequently they increase the general excitement, and add to the intensity of the gastro-enteritis. We read in the *Annales de la médecine physiologique*, several cases in which the bad effects of vesicatories are seen in the treatment of this disease. Several times I have seen M. Broussais obliged to recur to them when it was complicated with a thoracic inflammation, tending to the chronic form; he always waited until the symptoms of gastro-enteritis had nearly disappeared. In almost all these cases, on the next day, the patient had a red tongue, thirst, heat of skin and frequency of pulse; it was necessary to restrict the diet, and sometimes even to return to leeches.

We should not then attempt a revulsion of gastro-enteritis; we should only recur to revulsives when it is complicated with cerebral irritation not calmed by blood-letting from the neck. We will speak of this hereafter. However, when it is accompanied with vomiting, not relieved by the bleeding from the epigastrium, it is necessary to apply on the feet or legs warm cataplasms, which may be rendered more exciting by wetting them with cologne water or simple alcohol. We may also recur to sinapisms, to be left on the skin for about an hour only, unless they do not act in this time; but if we observe that the pain often determined



by them, produces too much excitement, it is necessary to take them off, and substitute warm cataplasms. Stimulation of the skin is reflected with so much facility on the gastric mucous membrane, that warm baths often exasperate its inflammation.

Whether there be constipation or diarrhœa, it is always useful to administer two emollient enemata every day. If the heat be considerable, if the colon be not inflamed, and if the patient be not very weak, we should prefer injections of cold water, or cold vinegar and water. The existence of diarrhœa, of tenesmus and colics, should never determine us to add opiates during the course of acute gastro-enteritis.

When the cerebral irritation is light, and the patient only complains of head ache, it demands no particular attention ; but when the pain is very severe, and the physiognomy is animated, we should fear delirium, and calm, as soon as possible, the encephalic irritation by the application of leeches to the temples or neck, and repeat the bleeding from the epigastrium, if the signs of gastro-intestinal inflammation, announce that it is still intense ; and, if there exist no counterindication to the repetition of blood-letting, when delirium has supervened, we should join to this means the application of ice on the head, and that of warm cataplasms or sinapisms to the feet and legs. It is by employing simultaneously local bleeding, cold and revulsives, that we often obtain the happiest results, which the successive application of each of these means would not produce. Cold and local bleeding, at the same time that they calm directly the encephalic irritation, prevent that of the skin from turning to its profit. It is however, necessary to be cautious in leaving the sinapisms long enough to produce pain ; for the latter stimulates the brain powerfully, and we would thus increase its irritation.

Often duing the course of gastro-enteritis, hemorrhages supervene, which are sometimes advantageous, and at other times throw the patient into the greatest danger. When he is not debilitated before the disease, when he still presents strong reaction, we should respect these flows, which often rapidly procure resolution of the inflammation. We should only arrest them when they become too abundant. In those cases, on the contrary, where the prostration is extreme, the pulse small and feeble, the skin livid, the mouth fuliginous, we should suppress them as soon as they appear ;

but we should not do it by tonics and astringents, like those who attribute them to adynamia; we should oppose them by revulsives, whose employment is without danger. Thus we should apply extemporaneous vesicatories to the back of the neck for epistaxis, on the upper part of the sternum for hæmoptysis, on the abdomen for hemorrhage of the intestines.

What we have just said of hemorrhages applies to the external inflammations showing themselves in the course of gastro-enteritis. When there supervenes an inflammation of the parotid, an erysipelas, a phlegmon, we should not interfere with them if we perceive that the intensity of the gastro-intestinal inflammation diminishes. If, on the contrary, the fever augment, if the dryness of the tongue increase, we should combat the secondary inflammation by leeches, since so far from becoming revulsive of the gastro-enteritis, it adds to its intensity; it is even necessary in this case to apply them also to the epigastrium, if the strength of the patient permit.

All visceral inflammations complicating gastro-enteritis, should be combatted by local bleeding, if no counterindications to their employment exist, because they manifestly add to the danger of the disease. Thus, when in the first period of its existence, a peritonitis is manifested, we should apply leeches to the abdomen; if difficulty of urinating announce that the irritation extends to the bladder, we should place some on the hypogastric region; the same also with the thoracic organs. If we only observe the hacking, dry cough, without expectoration pointed out as sympathetic of gastritis, it demands no particular attention. If by excess of this sympathy a pulmonary catarrh be developed, we should apply leeches under the clavicles, or immediately above the sternum, between the insertion of the sternomastoid muscles. If the irritation extend to the parenchyma of the lungs, and the pulse become large, it is necessary to practise a general bleeding, or recur to leeches if the patient have already lost a great deal of blood. In the two cases, we should keep the breast covered by large emollient cataplasms, to be renewed three or four times a day. The angina often accompanying gastro-enteritis, yields to an application of leeches and cataplasms. Sympathetic arthritis which also supervenes sometimes, should be combatted by the same means.

Inflammation of the colon is one of those most frequently complicating inflammation of the stomach and small intestine. We should treat this by emollient injections and leeches to the anus, which are very efficacious in this affection, as we shall see when we speak particularly of its treatment.

When the treatment (the rules of which we have just traced,) is early applied to the most intense gastro-enteritis, it almost always triumphs. But when the affection has been preceded by a chronic inflammation, when several organs are at the same time profoundly affected, when the disease has not been attacked at its commencement, when the patient has taken before hand, tonics or emetics, the evil is often beyond the resources of art; and in spite of these circumstances, too often met with, there exists a marked difference in the mortality of different hospitals, and of the different wards of the same hospital, where the patients are treated by the antiphlogistic method, or by tonics and emetics. In the practice of physiological physicians, we see much fewer *fevers* arrive at the adynamic form, than in that of physicians who follow the opposite plan. We know that danger only exists when this transformation takes place, or when ataxia supervenes.

When under the influence of bad treatment or of antiphlogistic means methodically applied, the patient becomes prostrated, the mouth becomes fuliginous, the skin livid, and the pulse feeble and at the same time frequent; or when at an advanced period of the disease, delirium and convulsive movements are united, what course ought the practitioner to pursue? We must confess that he possesses but few means of combatting the danger, and that in general they are of little efficacy. Blood-letting is no longer admissible; in this state of the disease, it is often fatal in a few hours; I have, however several times seen four or five leeches applied then to the epigastrium, make the symptoms disappear very rapidly; but we cannot advise such rash conduct.—Can we recur to tonics? All the symptoms we know depend on inflammation; the prostration, the stupor, &c. are the result of an increase of this lesion: what then can tonics do, but add to its intensity? We should, however, prescribe them notwithstanding this theoretic contradiction, if observation had proved them to be advantageous. But this is far from being the case. We know how very few *ady-*

*namic fevers* escape under the stimulant treatment, only successful when it produces revulsive actions in the secretory organs. We should then banish it even in the most desperate cases, since its advantages are very uncertain, and since when it does not promote the cure of the patient certainly hastens death. Besides, the physiological practice here, also offers resources we are not permitted to renounce in order to recur to dangerous means. In this alarming state of the disease, I have often seen the revulsive method combined with demulcents, snatch the patient from danger ; and in several cases, I have myself obtained from them the most advantageous effects ; it is necessary to apply sinapisms on the feet or legs, at the same time that fomentations are applied to the abdomen. If the skin be not livid and covered by a viscid sweat, we should apply previous to the sinapisms, four or five leeches to the epigastrium ; they are then without danger, and favor the action of cutaneous irritants : at least it is under these circumstances that I have seen them succeed. If, when their bites bleed for an hour, the pulse assumes a little force and development, we should favor the flow ; and if, afterwards the amelioration is more sensible, we should apply them again, and renew the sinapisms. If, on the contrary, we perceive that the smallness and feebleness of the pulse augment, we should immediately arrest the hemorrhage. If the sinapisms produce sufficient irritation to cause pain, it is necessary to substitute for them warm flax seed poultices, or a mixture of the latter with mustard ; if, instead of stupor, delirium exist, we should insist on the application of cold to the head, at the same time that the lower extremities are stimulated. We should at the same time, continue the use of mucilaginous or acidulated drinks, and give nothing which might add to the irritation of the digestive passages ; thus it is necessary to abstain from broths of veal or chicken, from whey, emulsions, &c.

When the malady is arrested in the first period of its existence, the vomitings cease, the epigastrium is no longer tender, the tongue has lost its redness, the skin its heat, the thirst its intensity, and the frequency of the pulse is much reduced, it is useless to insist on blood-letting ; diet, diluent drinks, enemata and fomentations, are then sufficient to complete the cure. When the frequency of pulse has ceased, we prescribe the nourishing drinks of which we



have before spoken ; and when the redness of the tongue has disappeared, we give broths, the quantity and nourishing quality of which we gradually augment. Sometimes a keen appetite is developed, whilst the fever still continues ; it is then necessary to allow a small quantity of broth ; for hunger, not satisfied, would add to the inflammation of the stomach. We should especially yield to the wants of the patient, when he has for some time been in the adynamic state. But we should be cautious not to confound the expression of a real want, with solicitations founded on the fear of dying from inanition, and the prejudice of the vulgar, who think they cannot live without taking food.

When the patient makes use of thin broth for several days, we allow him soups, cooked fruits, then white meats and old wine largely diluted with water. We will not recapitulate here, all that has been said in the article on convalescence, with regard to the cares and attentive watching it requires. We will only repeat that we should augment very gradually the quantity of aliments and their stimulating nature ; that as soon as the convalescent complains of pain in the head, loss of appetite, disgust and uneasiness, we should stop the other food and confine him for a day or two to broth and lemonade ; with these precautions the patient will soon be restored to his former state. We should recollect also, that if in spite of the use of aliments of a proper nature and the observation of all the hygienic rules, the patient does not recover his strength and *embonpoint*, he still carries a point of chronic irritation about him necessary to be destroyed.

When by the effect of diet, aqueous drinks, and blood-letting, the stomach is found in a state of debility, not permitting it to digest well, recognized by paleness and increased breadth of the tongue, by the absence of thirst, by extraordinary heat of skin, by sensibility of the epigastrium, &c. it is necessary to give some mild tonic to excite the stomach. We should then prescribe bitter and aromatic infusions, extract of bark, and a small quantity of generous wine ; but most frequently, as we have seen, there remains after the disease great irritability of the gastric mucous membrane, and we see established during convalescence a chronic gastritis. We thus find ourselves led to speak of its treatment, before occupying ourselves with that of intermittent and remittent colitis and gastro-enteritis.

The treatment of chronic gastro-enteritis is beset by a crowd of difficulties over which the physician can only triumph by displaying all the resources of the art, and by persisting in the employment of the means it furnishes, with the most determined perseverance. This treatment exacts a number of modifications according to the different forms assumed by the disease, its duration, and the state of the patient.

When chronic gastro-enteritis is primitive, when it affects a robust, sanguine individual addicted to good cheer, we should commence the treatment by the application of twelve or fifteen leeches on the epigastrium; and recur to them, in the early stage every six or eight days, according as the phlogosis demands it, and as the forces of the patient permit. When on the contrary it succeeds to an acute gastritis, when the subject is debilitated, or when it is primitive and the patient has lost a great deal of strength and *embon-point*, we should renounce this remedy which would produce a debility, the patient would be a long time recovering from, and which would render more difficult the cure of the chronic gastritis. It should be recollected that we often have to wait long on the latter, that it is necessary to persevere for several months in the use of strict diet, and that we should consequently husband the forces of the patient, who will have to strive against the debility induced by the disease and its treatment.

The regimen constitutes the most important part of the treatment, and often it is reduced entirely to dietetic attentions. The great art is to nourish the patient, whilst the gastric mucous membrane is stimulated as little as possible; we should only prescribe then such aliments as are very light, mild, and contain most nourishment in a small bulk. It is necessary generally to banish from the regimen of individuals affected with chronic gastritis, all substances taken from the animal kingdom, even gross broth. It should only consist of very white, well fermented bread, sago, salep, gruel, pap, milk, fresh eggs, cooked fruits and farinaceous vegetables. We should vary these aliments according to the taste of the patient and his ability to digest them; for one individual finds himself very well under the use of milk whilst another cannot bear it. These articles should be taken in small quantities at each meal, during which, water alone should be allowed as drink; the quantity of these

should be gradually increased as the phlogosis progressively diminishes. It is a precaution of easy execution and very important to note on account of the efficaciousness of its results, which we should always recommend to the patient, viz. that of refreshing the stomach after each meal by aqueous drinks, taken at intervals until the next meal or until the time for sleeping : the execution of this precept of M. Broussais cannot be too much recommended ; for we see the patients who submit to it, digest with facility, are almost always freed from the burning of the hands, the heaviness and sensibility of the epigastrium, and from the dryness of throat fatiguing them after eating.

Robust individuals in whom we have recommended the employment of leeches, should be put during the first days of the treatment, on the diet of acute diseases. We should allow them only light broths and mucilaginous or acidulated drinks ; this severity should be particularly rigorous, if there be pain in the epigastrium, and if the disease be the result of table excesses. We should relax by degrees, when the phlogosis passes to a more obscure grade.

We have said, in the history of chronic gastro-enteritis, that this disease undergoes often, under the influence of stimulating causes, and a well directed treatment, alternations of remission and exacerbation. Whenever it is exasperated, it is necessary to curtail a part of the aliments until we remark an amelioration, and also, if the epigastric pains be severe, we should apply leeches on the region of the stomach.

Between meals, the patients should drink every hour, a cup of sugar and water, of mucilaginous or acidulated ptisan, according to their taste. These drinks should be taken cold ; we are under the necessity of varying them often, as well as the aliments ; for, at the end of a short time, both fatigue the patients and inspire disgust.

Habitual constipation, in individuals affected with chronic gastro-enteritis, adds almost always to their uneasiness, to the heaviness of head and the epigastric sensibility—we should then remedy this evil by administering every day an emollient enema.

Patients should every day take moderate exercise in the open air, especially after eating. We recommend to them, walking, which is preferable to exercise in a carriage or boat, (unless they be very feeble,) and to equitation advantageous only when the patient no longer experiences pains ;

abstraction from cares of every kind, residence in the country, travels to mineral waters, which should not be taken internally; in short, they should give themselves up to all acts capable of increasing the vitality in the exterior parts, at the expense of the viscera and nervous system.—It is then indispensable to forbid, almost entirely to patients, closet labors, and every thing continually exciting the brain, as it always adds to the nervous susceptibility already too much exalted in most patients.

Individuals affected with chronic gastritis, should not live in too warm an apartment; they should likewise shun cold, damp air, and not load themselves during night with too much covering. We often calm epigastric sufferings by the application of emollient cataplasms, and many patients feel better from the contact of a piece of flannel doubled, a swan skin or a delicate fur skin.

Such are the principles of the treatment of chronic gastro-enteritis; we repeat that this disease, always very obstinate when of long standing, can only be cured by patience and the docility of the subject, and the perseverance of the physician in the employment of soothing means.

When the signs of chronic phlogosis of the digestive mucous membrane have disappeared for some time, the patient may return gradually to the use of meat and wine.—But during several months, and even during years, he should still consider himself as a convalescent, and use the greatest attention to shun all influences calculated to develop anew the irritation of the stomach; for this disease, when it has existed for several months, very often undergoes relapses with great facility, whose cure becomes more and more difficult.

Vesicatories, setons, and moxas, are very feeble adjuvants in chronic gastritis, and they often even add to the irritation. We should only employ them to re-establish an exanthem to whose disappearance the disease may be attributed.

Chronic gastritis is of all diseases, that in which purgatives are most abused, and also tonics and stimulants under the title of antispasmodics. What we have before said on the nature of *dyspepsias*, of *hypochondrias*, &c. dispenses with the necessity of pausing to demonstrate the danger of these medicines in the different forms of chronic gastritis; inflammation of the digestive mucous membrane treated by



tonics is cured still more seldom when it is chronic than when it is acute ; they often palliate and improve the feelings for some hours, but the sufferings are soon augmented, and they finally render the disease incurable ; they often produce fatal disorganizations. Purgatives, by irritating the large intestine, produce sometimes a revulsion of the phlogosis of the superior part of the digestive passages, but in almost all cases they only produce a palliation of short duration, and render the cure more difficult. Antispasmodics should only be prescribed when we are certain that the signs of the gastric affection do not depend on a chronic phlogosis, but on an irritation purely nervous. We may also have recourse to them when disorganization is certain, when the patients suffer severe pains, when, in fine, we are reduced to the necessity of treating symptoms. Thus we may give opiate preparations to procure a few hours of ease, the anti-emetic potion of Riverius to arrest obstinate vomiting, &c. ; but we should still be persuaded that it is by soothing means we succeed best in rendering less painful the latter period of the patient's existence—the only result to which the physician can then aspire.

Few diseases demand so imperatively as colitis, a reform in their treatment, directed by humoralism, empiricism and Brownism ; that of this disease, until lately, only consisted in the employment of emetics, purgatives, astringents, tonics, and opiates ; and notwithstanding the specific properties attributed to several of these medicines, their advocates could oppose but a small number of successful, to a great number of fatal terminations. In order to appreciate the value of this treatment, we have only to recall the ravages produced in all times by epidemic dysenteries and diarrhœas, justly considered as the scourge of armies.

Medicine is also indebted to the historian of the *phlegmasies chroniques*, for a treatment as rational as efficacious against colitis ; and amongst the numerous benefits received by the science from this great observer, the latter will, without doubt, be signalized as one of his most valuable improvements.

To withhold from the phlogosed membrane substances calculated to augment its irritation, to administer those possessing opposite properties, and to calm the inflammation by local bleeding—such are the curative indications M. Broussais has established in the treatment of colitis.

When the irritation of the colon is slight, or when it appears under the form of diarrhœa, we should, if it be recent, restrain the patient to an absolute diet, as long as he can support it, allowing him only mucilaginous drinks, or a decoction of rice or pearl barley. If the appetite of the patient does not permit him to support this regimen for several days, we should make an application of leeches to the anus; the disease will thus be terminated more promptly, and we may return sooner to the use of light aliments, which we will hereafter point out. Under the influence of this treatment, it is very rare that the diarrhœa continues many days, even when it is chronic.

When colitis is more intense, when it is accompanied with tenesmus and colics, it is necessary also to make an application of leeches to the margin of the anus; they should be prescribed in a greater or smaller number, according to the violence of the inflammation and the strength of the patient. In the majority of these cases twenty will be necessary, and it will be requisite to repeat them if the symptoms reappear after having been calmed. Sometimes there exists a more acute pain on one point of the track of the colon, and the belly is also more resisting at this part; it is then necessary to make a second application of leeches. If the colitis be complicated with an intense gastritis, we should also apply some to the epigastrium.

Applied to the anus in the treatment of inflammation of the colon, they are as efficacious as when placed on the epigastrium in that of gastritis. The happy effects they produce are even still more constant in the first than in the second. We are certain to overcome colitis rapidly by this plan, if the patient be at the same time restrained to the severest regimen. He should be deprived of all nutritive substances; for those which are not completely absorbed, irritate the mucous membrane of the intestine; we should then allow only weak solutions of gum arabic or tragacanth, decoctions of flax seed or seed of quinees. M. Broussais directs us still to use them with reserve; for, given in too great quantity, these fluids may fatigue the intestines as foreign bodies. They should only be administered in small doses at as long intervals as the thirst of the patient will permit.

We should at the same time cover the belly with fomentations or cataplasms which should be well applied to pre-

vent the patients from deranging them when they go to stool. M. Broussais regards enemata of mueilage or oil, advised by many physicians, as more injurious than useful on account of the distention caused in the intestines. Whatever be the state of weakness of the patient, whenever he is already debilitated by another disease, we should always recur to these means—means much more efficacious than tonics and astringents. Only we should apply leeches in smaller number; and as soon as the pains shall have ceased, as the evacuations are less frequent, when they are no longer accompanied with tormina, we should allow rice gruel, panada, &c. for it would be dangerous to submit the patient to abstinence for too long a time, unless it be required by another affection.

Such are the principles of the treatment of acute colitis. This affection is doubtless one of the phlegmasiæ, in which the antiphlogistic method procures the greatest success. "To overcome incipient colitis by the application of leeches on a proper part, is to annihilate," says M. Broussais, "epidemic dysenteries." Since the publication of *l'Histoire des phlegmasies chroniques*, experience has a thousand times confirmed this assertion.

We should persevere in the employment of the means pointed out, as long as the patient experiences tenesmus and severe colics, and the stools are frequent; however fatigued he may be by the abundance of the alvine evacuations, we should not recur to tonics, or we would see all the symptoms reproduced with the greatest violence. When the tenesmus and fever have ceased, and when the matters evacuated by stool, no longer contain blood, we reap great advantages from opiate preparations by potion, or by enemata, if the stomach be irritated. Given under these circumstances, opium ordinarily terminates the disease in a very few days; we employ it also with the greatest success, at its commencement, when the phlogosis of the colon has not arrived at a high degree of intensity, and when it has not excited general disturbances. I have heard it stated by M. Gama, chief surgeon of the eastern Pyrenees, that, in the epidemic dysentery prevalent in Catalonia during the last war in Spain, opium, administered as the first phenomenon of the disease appeared, almost always succeeded in arresting its progress.

When the symptoms have undergone a very marked

amelioration, we substitute feculent for mucilaginous drinks, and when the patient enters on convalescence, we allow then broths, rice gruel, panada, &c.: it is only when the cure is well established that he is permitted to return to animal substances.

M. Broussais says, that when the patients were docile to his counsels, the most violent dysenteries yielded to this treatment in ten or twelve days, and that they could, after fifteen or twenty, support the ordinary aliments of the healthy state. These results are very different from those obtained by the employment of emetics, purgatives, tonics, and astringents, under the influence of which a great number of dysenteries passed into the chronic state, when the patient did not expire in the acute stage, exhausted by sufferings and evacuations.

The treatment of chronic colitis presents the same indications to be fulfilled as that of the acute stage of inflammation; but it is no longer possible *to withhold from the inflamed mucous membrane all the substances which may augment its irritation*; it is necessary to nourish the patient, for if the phlogosis is of long standing, it cannot yield to an abstinence of several days, and this cannot be pushed farther in chronic diseases. We must then make choice of those articles containing the greatest proportion of nutritive substances, and that consequently furnish a smaller quantity of fæces. We ought to exclude from this class all organized substances; because, in spite of digestion, the action of the stomach cannot completely dissolve all their parts. The regimen then should be composed principally of fecula: sago, salep, rice, wheat flour, deprived as much as possible of bran, Indian meal, well fermented white bread, should constitute the ordinary nourishment of patients affected with diarrhœa. These substances should be employed in panada or *bouillies* (pap) prepared with water or milk. We should join to these, broths, when the patients bear them well, saccharine fruits, and at the end of the treatment, eggs and herbaceous digestible vegetables.

We should commence the treatment of all cases of chronic colitis, like that of acute colitis, by the application of leeches to the anus. The debility of the patient may make us limit their number to six or eight, but cannot determine us to renounce them entirely. This remedy abridges very remarkably the cure of the disease, and, seconded by regi-



men, it often succeeds in terminating it as rapidly as if it were acute. As long as the patient experiences tenesmus, as the stools are frequent and difficult, we should confine him to absolute diet and to mucilaginous drinks, unless this condition become very obstinate, and there is pressing necessity for sustaining the strength.

When it is permitted to give nourishment, it should at first only be in very small quantities; we should augment the quantity gradually, according to the decline of the phlogosis, and wants of the patient. During the first periods of the disease, he should be confined to demulcent drinks; if the stomach be not irritated, slightly aromatic infusions should be preferred, such as those of flowers of violet, or of white mullein; they should be administered warm. When no general erethismus exists, when the stools are few and easy, and when the stomach is sound, we prescribe tonics in small doses for the purpose of favoring digestion. We then add a small quantity of old wine to the rice water, or water drank by the patient at his repasts—we give also a bitter infusion or a weak decoction of bark; but it is necessary to watch the effects of these medicines; and no matter in how small a degree they add to the uneasiness of the patient, instead of procuring relief, and how little the frequency of the stools is increased, we should at once renounce tonics. I have several times had to repent having administered them under circumstances in which their employment seemed best indicated.

Enemata, though they fatigue the intestines when their inflammation is acute, are advantageous in chronic colitis; especially those composed of starch and water, in which a few poppy heads have been boiled. In order to avoid distending the intestine, we should give small enemata, repeating them several times a day, according to the relief procured.

When leeches and regimen have calmed the irritation, and there is no longer general excitement, we have recourse to opium, which then produces excellent effects. We administer in the evening laudanum, or the aqueous extract of opium in a mucilaginous draught; but we obtain no good results from the employment of this medicine unless it be seconded by severe regimen.

We have often obtained success by the employment of warm baths; it will easily be conceived, after what we have

said on the sympathies of the large intestine with the skin, that the excitement determined by them in this membrane, must produce a salutary revulsive action. We derive also, in chronic colitis, good effects from a more active cutaneous stimulation. Professor Desgenettes has employed successfully in these cases, vesicatories on the abdomen. I have often seen in the *Hotel Dieu* the application of a blister to the upper internal part of the thigh, arrest obstinate diarrhœas ; but as long as the abdomen is hot and painful, and the stomach irritated, we should abstain from them.

We will not speak of the attentions required in convalescence following acute or chronic colitis ; every one knows that it is only with the greatest reserve that food should be allowed ; that it is necessary to avoid those articles exercising too strong a stimulation on the digestive passages, and furnishing a great deal of excrementitious residue ; and that, whenever the abdominal pains and liquid stools reappear, we should return to a severe regimen, in which we should persevere until the action of the mucous membrane of the large intestine has returned to its normal state.

After having laid down the treatment of acute and chronic inflammation of the gastro-intestinal mucous membrane, we should speak of that of intermittent gastro-enteritis ; what we are about to say applies to the treatment of other irritations of the same type : it is for this reason that we have deferred this subject until now, instead of placing it in the general treatment of irritations.

Before the application of physiology to the study of diseases had rendered their theory and treatment more clear, that of intermittent fevers reposed already on solid bases, and multiplied successes had for a long time determined in favor of the curative methods which were opposed to them. Frequent failures, however, called for new researches on this subject. The labors of M. Broussais have perfected this part of therapeutics, and the knowledge of gastro-enteritis, by developing the cause of these failures, has at the same time furnished the means of preventing them.

Practitioners had insisted on the necessity of making patients affected with intermittent fevers undergo a *preparation* before administering bark or any other stimulants ; but this preparation consisted in bleeding when the subject was plethoric and prescribing an emetic or purgative. Bleeding

might produce good effects when a parenchymatous organ was the seat of irritation, but when it affected the gastro-intestinal mucous membrane, it was of but little use, and it debilitated the patient without being of any advantage.— Emetics succeed sometimes in curing intermittent irritation when they are administered during a complete apyrexia ; but as they give this name to the cessation of the frequency of the pulse, of the heat of skin, of the head ache ; because they paid attention to the fever alone, because they were not acquainted with the irritation of the digestive organs producing it, and because they took for signs of *embarras gastrique* those announcing that the irritation of the digestive passages continues during the paroxysm, it follows that they administered emetics to almost all patients. As these agents, when they do not produce happy effects, are rarely innocent, in the very many cases where they do not overcome the disease, far from favoring the action of bark, they on the contrary, dispose the gastric mucous membrane, the liver, and spleen, to experience unfortunate results from it.

Stimulants possess very great efficacy in the treatment of intermittent fevers, when they are administered during the apyrexia, and when the latter is perfect ; in other cases, they either fail to arrest the disease, or render it more obstinate by complicating irritation of the stomach with that of the liver and spleen. Indeed, they then exasperate the inflammation, and make it pass into the continued form, or put a stop to the paroxysms by making it continue in a chronic form, and produce inflammations of the same form in the parenchymatous viscera. It is thus that bark produces *obstructions*. The first indication presented in the treatment of intermittent gastro-enteritis is then to render this inflammation perfectly apyretic, when in the intervals between the paroxysms the tongue remains red on its edges and the skin hot ; when the patient preserves his disgust for food, thirst, cephalalgia, and a general uneasiness ; second, to overcome the exacerbations of irritation by the employment of medicines, proved by experience to be efficacious under these circumstances.

We fulfil the first indication by the aid of antiphlogistics employed during the exacerbations and in the intervals.— We apply leeches to the epigastrium, in greater or less number, according to the intensity of the phlogosis, during the time of the heat ; we prescribe mucilaginous or acidulated

drinks, and when the paroxysm has passed, we still restrain the patient to the use of the latter and to a severe diet ; we, however, allow him small quantities of broth, and even more substantial aliments if the signs of gastric irritation be indistinctly marked ; but it is very rare that, as long as these continue, the patients feel any appetite. At the second exacerbation we should follow the same conduct : if the subject be strong, we should repeat the application of leeches, if not, we should content ourselves with the administration of demulcents, &c. Under the influence of this treatment, the signs of gastric irritation will be seen to disappear in the intermission, and the exacerbations lose their intensity ; if, however, they still continue for some time, it will be necessary to restrain the patient to absolute diet.

Often the antiphlogistic method does not limit here its happy effects ; we frequently see the paroxysms cease entirely under its influence when the disease is recent, or even when it is of a month or six weeks standing ; a great number of cases published on this subject for several years, attest the truth of this assertion ; they are too multiplied at the present day for us to take up time in reporting from them here ; we will content ourselves with referring the reader to the *Annales de la médecine physiologique*, and to the dissertation of M. Fabre, containing nine, which are the more remarkable, as in the individuals who are the subject of them, the fever had already undergone a great number of exacerbations.

When the antiphlogistics have not produced a cure of the disease, and during the apyrexia, the tongue is pale throughout its whole extent, the skin presents its accustomed temperature, the patient no longer has thirst or disgust for food, pains in the head and limbs, we are assured that the intermittence of the gastric phlogosis is perfectly intermittent ; it is then necessary to recur to stimulants. Bark in substance, in decoction, in extract or in tincture, administered by the iatroleptic method, the sulphate of quinine, the unguent or opiate tartar emetic draught of M. Peyson, merit the preference. It would be superfluous for us to stop to describe the mode of administering these medicines, but we should still present some considerations on their employment. When the stomach, notwithstanding the previous use of antiphlogistic means, is too irritable to support Peruvian bark or sulphate of quinine, it is necessary to



recur to frictions with the unguent of Dr. Peyson, or the Tincture of Bark; I have very often seen M. Broussais obtain excellent results from the employment of the latter. When, under the influence of stimulants, the inflammation passes into the continued form, we should combat it, as if it were primitive, by leeches to the epigastrium, demulcent drinks and diet; if it pass to the chronic state, still preserving the continued type, if it be accompanied with engorgement of the viscera, we should combat it by the treatment proper to chronic gastro-enteritis. Sometimes *obstructions* take place although the fever continues under the intermittent form; in such cases they yield with it to bark. If the irritation assume the remittent type, we should not persevere, as many physicians do, in prescribing stimulants; it is necessary to act as we shall shortly direct.

It is always in the apyrexia of intermittent gastritis, that the bark and other stimulants should be administered. M. Broussais advises us never to employ them during the hot stage; for they then rarely succeed in curing the disease; they make it pass into the continued state, and the phlogosis then continues in a chronic form, and determines engorgement in the parenchymatous viscera. Neither should we administer them during the chill; for they often give more intensity to the period of heat. During the duration of the first, we should only give warm infusions slightly stimulating, such as tea, arnica, &c.

Remittent gastro-enterites are still more frequently cured by the antiphlogistic method than those of the intermittent type. They also present the first indication we have established for the former; we should combat the inflammation during the heat, by the application of leeches to the epigastrium; and as there remains during the interval between the exacerbations a degree of phlogosis sufficiently intense to keep up the febrile state, we should also apply them during the remission, and confine the patient to absolute diet. It is rare, we repeat, that a cure is not obtained by this method. In those cases in which the phlogosis persists, it passes ordinarily to the intermittent type by means of the care taken to combat it with antiphlogistics during the remission; then we have recourse to stimulants.

The treatment of malignant intermittent and remittent inflammations, should be submitted to the same principles as that of mild periodic inflammations. The violence and

danger, however, of the symptoms, should introduce some modifications.

When the disease has yet undergone but one or two paroxysms, when during their existence the pulse is full and strong, the skin hot and colored, the tongue red, we should immediately apply leeches to the epigastrium and even resort to general bleeding, if congestion take place in a parenchymatous organ. When the exacerbation has passed we should at once recur to sulphate of quinine in rapid doses.

We cannot here, as in ordinary intermittent irritations, wait for new paroxysms for the purpose of combatting them by debilitants; we would succeed perhaps in rendering them less grave, but success is not certain, and the patient may die during their presence. Stimulants will make the phlogosis pass into the continued state, or make it put on the chronic form; but in both cases it brings less danger to the patient, than the paroxysms or exacerbations, and we may combat the phlogosis by antiplogistics. Thus then, even when the tongue remains red during the intermission or remission, and when the febrile state continues, it is necessary as soon as the paroxysm has ceased, to administer the sulphate of quinine internally. If, however, the stomach retain too high a degree of irritation, if the subject, before the invasion of the existing disease, were affected with a chronic gastritis, it will be necessary to administer this medicine by injection, if the colon be not inflamed, and to prescribe at the same time frequent frictions over the whole skin, except the epigastrium, with the tincture of quinine. When the paroxysms have disappeared, if the patient preserve a gastric irritation or any other, we should combat it by diet, local bleedings as near as possible to the inflamed point, and demulcent drinks.

When intermittent or remittent inflammation, has already experienced several exacerbations; when the pulse is small, feeble and intermittent, and the skin livid; and when the patient has lost sensibility, we should be cautious not to recur to local blood-letting, as in the first case. M. Broussais insists on the danger of sanguine evacuations under these circumstances, advises us to recur immediately to revulsives and not to ingest bark into the stomach during the paroxysm, on account of the high irritation then existing in the viscera; we should then apply immediately on the legs and

thighs vesicants which are rapid in action, use frictions at the same time on the extremities, thorax and back, with the tincture of quinine, and give, if the large intestine be not inflamed, a small glyster with five or six grains of sulphate of quinine. As soon as the paroxysm has passed, we should administer this substance by the stomach, except in the cases we have pointed out above, and we should still for some days, continue glysters with quinine, and frictions with the tincture of bark. It will only be at the period, when we have no longer to fear exacerbations that we may employ antiphlogistics to combat the remains of the inflammation.

## RELATIONS OF GASTRO-ENTERITIS WITH OTHER INFLAMMATIONS.

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We have often pointed out the influence exercised by irritation of the different organs of the economy on the development of gastro-enteritis: we have seen that it was to the latter that we should refer these complications of *bilious*, *adynamic* and *ataxic fevers*, so frequently observed during the course of a great number of inflammations, and often modifying them in the most remarkable manner, because the inflammation of the digestive passages reacts in turn on that which has produced it, and very often adds to its violence. Physicians had already foreseen this fact when they insisted on the necessity of watching over the state of the *primæ viæ*, at the commencement of all maladies; but, governed by vicious theories, they confined themselves to the prescription of evacuants for the purpose of expelling fluids, to whose presence they attributed the development of the symptoms which complicated the first lesion. Surgeons have often observed that a *vicious state* of the stomach opposed the cure of wounds and a number of other affections; and those who are enlightened by the physiological doctrine, remark constantly the influence exercised by gastro-enteritis on external lesions. We know that a transgression of regimen changes rapidly the condition of a suppurating wound: its surface covered with fleshy granulations exhaling a healthy pus, lately was marching on towards cicatrization; it becomes all at once pale, the granulations and the borders of the ulcer sink, ichorous discharges run from it, and the progress of the evil augments from day to day, if the patient continue his excess, or if the gastric irritation be not treated by proper means. We have always known the propriety of restraining the diet of individuals affected with wounds and ulcers: and if the effects of this method were not always happy, it is because they, at the same time, administered tonics to sustain the strength, if the external lesion were the seat of an abundant suppuration, or if the patient were weak. I have seen a great



number of old ulcers resulting from venereal buboes, rebellious to all local applications and the most complete general treatment, evidently kept up by a chronic gastritis, yet improve rapidly under the influence of diet, and disappear when the gastric phlogosis was removed.

These are not only the benefits received by surgery from an alliance with the physiological doctrine; more enlightened on the nature of a great number of affections which it knew not how to remedy otherwise than by operations, and on the accidents so often complicating these latter, it obtains at the present day more cures without the aid of cutting instruments, and the results of the application of the latter are more frequently successful. For a long time, surgeons have had to deplore the unhappy consequences of a great number of operations in the execution of which they had rigorously followed the precepts of the art, because they often misunderstood the inflammations supervening after them, or because they did not treat these last by proper means. "If operations, in spite of the incontestable skill of French surgeons, are frequently followed by reverses," says M. Broussais, "it is because they do not give sufficient attention to the prevention of the inflammation which must follow them, and because they are not persevering and rigorous enough in the debilitating treatment, and in the sanguine evacuations it is proper to oppose to them."

They know to how many dangers the wounded and individuals operated on are exposed by the development of traumatic fever, which *degenerates* frequently into *bilious*, *adynamic*, or *ataxic fevers*. Far from doing any thing to prevent it, they favored the development of gastro-enteritis, by the habit they were in of administering indiscriminately tartar emetic to almost all wounded persons. When it had actually supervened, general bleeding was the only means they employed for moderating it, if it were violent, and they never directed the treatment against the organ whose inflammation produced the febrile symptoms. If the latter were accompanied with bilious, adynamic, or ataxic phenomena, they eagerly returned to emetics and the administration of tonics and stimulants. At present we succeed most frequently in preventing traumatic fever, by attacking the external inflammation by local bleeding, as soon as it acquires too much intensity, and by submitting the patient to a severe diet: I have several times seen absolute absti-

nence sufficient to prevent the development of fever after the great operations and after delivery. Finally, if we cannot prevent inflammation of the viscera, we soon arrest it by local bleeding.

The same principles have been applied to the treatment of disease known as *phlegmasia*, and to the treatment of *sarcocoele*, and to the treatment of *local bleeding*, and to the treatment of the military hospital of Strasbourgh, in a discourse filled with profound and luminous views, the numerous successes he has obtained by introducing into the practice of surgery, the spirit of physiological medicine. In leaving this subject, we do not know what better to do than to refer to the last work of M. Bégin, who has the merit of having first in his writings, applied the principles of a doctrine of which he is one of the most firm and brilliant defenders, to the study of surgical diseases.

We will not extend farther this digression, to which the examination of the relations of gastro-enteritis with the other *phlegmasiæ* have conducted us ; we have only wished to call the attention for a moment to the necessity of applying to surgery the principles of physiological practice. In a discourse pronounced at the meeting for the distribution of the prizes of the Val-de-Grâce, M. Broussais foretold, four years ago, the happy results this alliance must produce ; and under analagous circumstances, professor Gama announced, two years after, at the military hospital of Strasbourgh, in a discourse filled with profound and luminous views, the numerous successes he has obtained by introducing into the practice of surgery, the spirit of physiological medicine. In leaving this subject, we do not know what better to do than to refer to the last work of M. Bégin, who has the merit of having first in his writings, applied the principles of a doctrine of which he is one of the most firm and brilliant defenders, to the study of surgical diseases.

It would be superfluous to pass in review all the inflammations, to establish the relations existing between them and gastro-enteritis ; in the history of this disease, we have presented a sufficient number of general considerations on this subject to show the necessity of preventing it in all diseases, and of arresting its progress whenever it is present ; it will be sufficient for us to pause at the inflammations on which it exercises a particular influence, I mean to say, those of the liver, of the skin, of the articulations and of the brain. We shall thus find occasion to present a great number of the principles of the physiological doctrine, whose exposition could not be placed in any other part.

## ARTICLE I.—RELATIONS OF GASTRO-ENTERITIS AND HEPATITIS.

According to M. Broussais, hepatitis is consecutive to gastro-enteritis, when it does not depend on external violence. This opinion is of too great importance in practical medicine for us to pass it without demonstrating its truth.

United by the strictest bonds to the digestive mucous membrane, on the surface of which its excretory duct opens, the liver participates very often with the irritation it experiences, under the influence of stimulating *ingesta* ; we also see this gland irritated often in gastro-enteritis, from the degree which gives rise to bilious *embarras gastrique*, and bilious fever to the most acute hepatitis, principally in hot countries and seasons, and in individuals endowed with hepatic predominance. If we seek what are the causes of this inflammation, besides external violence, we shall see that hepatitis is determined by the use of black meats, all meats rendered too stimulating by seasoning ; by generous wines, alcoholics, emetics, drastics, and bark, in intermittent fevers ; by strong moral affections, by the heat of summer, by a sedentary life, and closet labors, when at the same time individuals who indulge in them do not observe a sober regimen ; now, all these causes necessarily irritate the gastro-intestinal mucous membrane—they only develop hepatitis then through the medium of gastro-intestinal phlogosis. Inflammations of the liver are very common in tropical regions, whilst we rarely meet them in temperate climates, and still more seldom in northern latitudes ; we know the influence of heat over the development of gastro-enteritis, and moreover, we observe in hot climates, much fewer pure hepatites than intense *bilious fevers*, *yellow fevers*, *cholera morbus*, affections in which we cannot deny the alliance of gastro-enteritis with irritation of the liver.

Wounds of the head, or rather traumatic inflammations of the brain and meninges, are as we know frequent causes of hepatitis. Practitioners agree in regarding it as a sympathetic effect of encephalic irritation ; for the numerous examples of inflammation of the liver developed under these circumstances, without the individual having experienced any general commotion, in which this viscus could have been lacerated and without the hypochondrium

having been submitted to any direct violence, has not permitted us to adopt the opinion of a nosographer, who contends that those inflammations of the liver supervening on wounds of the head are primitive results of the lesion experienced by this viscus in the fall of the patient. M. Broussais has established that encephalic inflammations are always accompanied by a gastro-intestinal irritation; the hepatitis complicating them, does not make an exception to the principle he has established on the mode of their production.—But it remains to explain why irritations of the brain and meninges which are not the effect of external violence are not accompanied by hepatitis, although they develop a gastro-intestinal irritation, as well as those that are traumatic.

Let us pass on to the examination of symptoms; it will furnish us with the same results. To the obtuse pain in the right hypochondrium, to the tumefaction of this region, the lateritious urine, the jaundiced appearance of the skin, and pain in the right shoulder, we see joined a bitter taste in the mouth, a mucoso-bilious aspect of the tongue, redness of its edges and point, thirst, disgust for food, and often vomiting—manifest signs of gastro-enteritis; so that in many cases, at first, as authors tell us, it was thought that *bilious fever* existed. The phenomena we have just pointed out show, it is true, that phlogosis of the stomach and intestines exists, but these do not prove, say they, that hepatitis is consecutive to it. If they examine the histories of inflammations of the liver, collected by close observers of facts, we see that anorexia, thirst, redness of the tongue, and fever, always precede the signs of hepatitis, when it is not traumatic, and that, when these last augment in intensity, those of gastro-duodenitis are exasperated also. We, on the contrary, see the employment of demulcents and blood-letting, at the same time that it calms the gastro-enteritis, diminish also the intensity of the hepatitis. Any one will be convinced of this truth by reading a very interesting memoir, inserted by Doct. Lassere in the *Annales de la médecine physiologique*, in which all the opinions this physician advances, are founded on a series of observations reported by him.

What are the phenomena of chronic hepatitis? To the signs peculiar to the affection of the liver, do we not see always joined those of hypochondria, dyspepsia, constipation, anorexia, thirst, and a sense of heaviness at the epigas-



trium after eating, heat and dryness of the pharynx, &c. that is to say, the signs of chronic gastritis; and it is even only after the patients have presented the phenomena of it, during several months, that we see symptoms of hepatitis manifested. We know that it is by forcing down them dry food, by depriving them of fluids and exercise, by procuring, in short, a gastro-enteritis, that we produce in geese and ducks, that alteration of the liver known under the name of fat liver.

Pathological anatomy also confirms these principles. M. Broussais has remarked, that in all individuals in whom we find, on autopsie, the liver more voluminous, yellow, and oily, the mucous membrane of the duodenum is at the same time thickened, brown or black, and sometimes ulcerated.

This is not a sterile discussion on a point of theory; the principle established by M. Broussais, is of the highest practical importance; his object is to show, that by calming gastric irritations, at the commencement we prevent or arrest hepatitis, and that the treatment should be specially directed against the gastro-enteritis which has always been exasperated heretofore by emetics, purgatives, *discutients*, *deobstruents*, &c. Thus then, when even they would persist in maintaining that the mode of production assigned to hepatitis by the professor of the Val-de-Grâce is too exclusive, they would always be forced to agree that, in all acute and chronic hepatites, there exists a concomitant gastro-enteritis, and that consequently all the practical importance of the opinion of M. Broussais remains; for it will also be recollected that the inflammation of the mucous membrane of the stomach and duodenum, whether it be primitive or consecutive, must necessarily influence that of the liver, which is united to it by the strictest sympathies. Under this point of view, traumatic and other cases of hepatitis are analogous; for they do not fail also to produce gastro-enteritis.

These new facts on inflammations of the liver, ought then to change entirely the treatment of this malady; they explain to us why, under the influence of the means formerly opposed to it, hepatitis so often passed into the chronic state, and why, when it put on this form, it was most always incurable. Indeed, if emetics and purgatives produce relief in individuals affected with chronic hepatitis, by the evacuations they procure, they succeed but very rarely in curing

the disease, by establishing a revulsion on the large intestine, and in nearly all cases they increase and perpetuate the chronic phlogosis of the stomach and small intestine, and consequently that of the liver. So also with bitters, saponaceous articles, saline mineral waters, with which patients laboring under these affections are gorged. We should also remark, that emetics and purgatives themselves provoke these abundant secretions of bile discharged by patients after their ingestion. Individuals affected with chronic hepatitis, making habitual use of evacuants, constantly present signs of a supersecretion of bile that determines physicians to recur more frequently still to emetics, calomel and saline cathartics, whilst, if fatigued by a treatment under the influence of which their evils increase more and more, they claim the attentions of a physiological practitioner, these signs of *bilious turgescence* disappear after some time, and perseverance in the regimen of chronic gastritis.

Since the stimulation felt by the liver comes to it from the gastro-intestinal mucous membrane, we should always endeavor to calm the irritation of the latter, and this precept should be considered as the basis of the treatment of hepatitis.

In general, this inflammation requires no other treatment than that of gastro-enteritis; often the principal disease exists in the stomach and duodenum, and the liver only experiences a slight sympathetic irritation, which disappears at the same time of that of these organs. We will not repeat here what we have said of bleeding and regimen in the history of gastro-enteritis; we will limit ourselves to the following considerations.

We should commence the treatment of acute hepatitis by the application of leeches to the epigastrium; they should be in greater number than if the inflammation had been confined to the digestive passages; a part should be placed on the right hypochondrium. We should at the same time prescribe a general bleeding, if the pulse be large, hard, and full, and announce an intense inflammation of the parenchyma of the liver. If after the first bleeding, this state of the circulation continues, we should repeat it, unless the weakness of the patient forbid; but in acute inflammations, this rarely originates counterindications to the employment of copious bleedings. We should persevere also in the employment of capillary bleedings, as long as the signs of

gastro-hepatic inflammation preserve their intensity. It is useless to say, that these means should be seconded by absolute diet, cold acidulated drinks, and fomentations on the superior part of the abdomen.

Guided more by anatomical structure than by the results of experience, many practitioners have advised us to apply leeches, in preference, to the anus, for the purpose of unloading the vena portæ, by means of the hemorrhoidal vessels. Without doubt it is necessary to diminish the mass of blood carried to the inflamed organs, when, independently of that which they receive for their nutrition, they are also penetrated as the lungs and liver, by that destined for their function. But is it by bleeding from the margin of the anus that we shall obtain this result? What influence can be exercised on the circulation of the vena portæ from the slow emission of a few ounces of blood, by a capillary bleeding, as promptly repaired as it is evacuated? We would act much more efficaciously on the circulation of the liver by a general bleeding that subtracts rapidly a large quantity of blood. Besides, supposing that they diminished the quantity of this fluid, circulating in the vena portæ, in a notable manner, they would not completely fulfil the end they propose; for the liver receives a great deal of blood by the hepatic artery, and that which it conducts is much more stimulating than that which arrives at the liver through the former.

We should, however, apply leeches to the anus in hepatitis, if the patient has been subject to a hemorrhoidal flux which is suppressed or become less abundant for some time, or if the colon be simultaneously affected with irritation; but they do not supersede the necessity of applying them also to the epigastrium.

It is well known that the inflammation of the liver, sympathetic of traumatic encephalitis often terminates by an abscess in this viscus, whilst suppuration is very rare in hepatitis produced by other causes. Is this difference attributable to this, that the affections are more profound in the first case than in the second, or to the continual use made by almost all surgeons, of tartar emetic according to the method of Desault during the existence of the disease? However this may be, what we know of the influence of gastro-enteritis on hepatitis should make us renounce this practice, even if we did not know that the irritation of the digestive

passages reacts very easily on the brain, and thus adds to its irritation.

The treatment of chronic hepatitis does not differ from that of gastritis of the same type ; we refer then to what we have said on that subject ; with this exception, that as here an organ very rich in capillary vessels is irritated, we should more frequently recur to local bleedings as long as the strength of the patient permits, and there are no signs of disorganization. The revulsive method has sometimes produced good effects ; cures have also been performed by the application of moxa and cautery on the right hypochondrium. Before recurring to these, we should practise one or several local bleedings ; we should watch their effect on the digestive passages, in order that we may suppress them immediately if the tongue becoming more red, the skin warmer, &c. announce that the cutaneous irritation has exasperated that of the stomach. Finally, we should banish with the greatest severity from the treatment of chronic gastro-hepatitis, evacuants, bitters, saponaceous substances and all the pretended deobstruents, which only add to the chronic inflammation and bring on disorganizations.

#### ARTICLE II.—RELATIONS OF GASTRO-ENTERITIS WITH CUTANEOUS INFLAMMATIONS.

Acute inflammations of the skin, were, before the origin of the physiological doctrine, one of the most obscure parts of pathology ; they ought, according to this relation, to be placed after *essential fevers*, and practitioners could not be surprised at it if they paid attention to the fact that the same lesion which constitutes these last, plays in the former the principal part, and holds the other phenomena under the strictest dependance. Though they have pretended that theories exercise no influence on practice, the treatment of eruptive inflammations was as incorrect as that of fevers, because their theory was disfigured by the same defects ; we also know the ravages committed formerly by epidemics of scarlatina and measles, and those much more terrible ones of small pox. The discovery of gastro-enteritis has led to the exposure of the nature of eruptive diseases ; it also soon led the author of the *Examen* to establish that the premonitory fever (*fièvre d'incubation*,) of cutaneous inflammations is a gastro-enteritis, that the cessation of the fever when the eruption takes place, is the result of a revulsion



of the gastric phlogosis on the skin, and the secondary fever that of the reaction of the cutaneous inflammation on the gastric mucous membrane ; that the premonitory symptoms of apyretic cutaneous inflammation appertain to gastritis, that the fever produced by inflammations of the skin from external causes is so likewise, according to the same mechanism as the secondary fever of small pox. M. Talma has very ably developed these propositions in his dissertation on eruptive diseases ; it deserves here an extended analysis.

The febrile phenomena marking the invasion or the premonitory symptoms of mild *eruptive fevers*, are, a slight chill followed in a short time by a warm perspirable state of the skin, frequency of the pulse, redness of the borders and point of the tongue, more or less thirst, disgust for animal substances and warm drinks, and a desire for cold acidulated drinks. To these phenomena are joined a sense of lassitude in the members, repugnance to movements, pains in the back and articulations, and finally, disturbance of the secretions. The duration of this state is three or four days. To the irritation of the digestive passages is also joined, in measles and scarlatina, an inflammation of the conjunctiva, of the mucous membrane of the pharynx, and often that of bronchiæ.

When the disease is to be malignant, the phenomena characterizing this period, are more violent, more numerous and more varied ; but they always point out lesion of the same organs, to which is joined sympathetic irritation of one or several others. The chill is more violent ; it is accompanied with insupportable uneasiness, contusive pains in the extremities, and general lassitude ; the skin is dry, very hot and acrid to the touch ; the pulse frequent, small, hard and concentrated ; the tongue dry and of a florid red at its point and borders ; sometimes it is covered with a fuliginous coat ; the brain or meninges are more irritated than in the former case, and delirium is joined to all these symptoms.

The phenomena pointing out the invasion of eruptive diseases are absolutely like those which, according to authors, characterize essential fevers ; the identity of morbid phenomena, indicate uniformly an identity of lesions, and if an individual who had never had small pox, should die during the first stage of this disease, no index could es-

tablish that it was a *malignant eruptive affection*, instead of an *essential*, *adynamic*, or *ataxic fever*, which destroyed him. The co-existence of a variolous epidemic would prove nothing; it would only furnish probabilities; for *essential fevers* may take place during the course of variolous epidemics, as well as under any other circumstances. This perfect resemblance of the first stage of eruptive diseases and *essential fevers*, shows then that the same organs are inflamed in both cases; if there remain any doubts on this point, post mortem appearances would dissipate them. They have often shown inflammation of the digestive passages in cases where death had taken place in the commencement of the eruption.

In all eruptive diseases, when the internal irritation signaling the first symptoms is moderate, the eruption, in proportion as it comes out, is followed by the gradual or complete cessation of the febrile phenomena; the irritation is displaced; to the affection of the mucous membranes, succeeds that of the teguments; and, as the skin does not maintain such strict sympathies as the former, with the other organs, its inflammation is not accompanied with the same disturbances in the functions. We observe this result of the secondary irritation of the skin, not only in *eruptive fevers*, but also in the gastro-enterites called *essential fevers*; but practitioners have neglected to trace an analogy between the former and the eruptions with which these are sometimes accompanied, and they have contented themselves with considering them as critical phenomena.

The eruption comes out with more difficulty in proportion as the gastro-enteritis is more intense; it is then less completely revulsive of the internal inflammation, and often even the two inflammations co-exist. Physicians also have remarked, that the more the febrile symptoms of the invasion of smallpox are alarming, the more we should dread also to see the cutaneous inflammation develope itself with difficulty, and the fever run through its stages without being interrupted.

The intensity of the eruptive inflammation is in general proportionate to that of the gastro-enteritis; "the more moderate the variolous fever, (that of the first stage," says Stoll, "the lighter is the eruption." If this latter be not always in proportion to the violence of the gastro-intestinal inflammation, it is because the latter prevents as we have just said, the external irritation from rising to a high degree.

When the cutaneous inflammation has produced a revulsion of the gastro-enteritis, and when it is of little intensity, the fever is not reproduced, and the disease is soon terminated. But if the inflammation of the skin be violent and very extended, it in turn reacts on the viscera, and especially on the digestive mucous membrane, reproducing all the febrile phenomena. Such is the mechanism of the *secondary fever*; it does not differ from that manifested whenever any organ is affected with a violent inflammation. This reproduction of the fever cannot then be constant, and the different degrees it presents in its intensity are in relation with those of the external irritation. There exists several eruptive diseases in which secondary fever scarcely ever takes place: such are rubeola, scarlatina, and varicella; on the contrary, variola presents it in the greater number of cases. It is useless to remark that in malignant eruptive diseases, (as they express it,) gastro-enteritis not ceasing, there is not reproduction, but a continuation of the phenomena producing it.

Cutaneous inflammation does not always limit itself to the reproduction of gastro-enteritis; it sometimes excites irritations in the other organs, and especially in the brain and meninges; but the inflammation of the digestive passages, has still greater influence than that of the skin in the development of these sympathetic affections.

Apyretic eruptive inflammations present the same relations as these with gastro-enteritis. In the former, the gastro-intestinal irritation was at the degree of intensity which produced febrile reaction: if in other cases the latter does not manifest itself, the cutaneous affection is not the less on this account under the dependence of gastric irritation, when the signs of the latter are present. Erysipelas and furunculus are ordinarily preceded by inappetency, fetid breath, whitish or yellowish state of the tongue, and often by diarrhœa and vomiting. The cutaneous affection is so connected with that of the gastric mucous membrane, that if the latter be overcome, the former disappears promptly, whilst we see furunculi reproduced with the greatest obstinacy as long as the gastric irritation continues; for it is remarkable that it is never revulsed by the cutaneous inflammation as in *essential fevers*.

Inflammations of the skin, produced by external causes, are not, like those from an internal cause, under the depen-

dance of gastro-enteritis; but when they rise to a certain degree of intensity, it is very rare that they do not provoke an irritation of the gastric mucous membrane, which may acquire the greatest violence and bring on the most serious consequences. It is to this circumstance that we should refer what authors have said of the complication of *essential fevers* with inflammations of the skin.

All these facts show the exactitude of the principles established by the professor of the Val-de-Grâce, in regard to these diseases. Let us now examine the practical inductions they furnish us.

Since irritation of the digestive organs plays so important a part in eruptive diseases, the physician, in the treatment of these affections, should always fix his attention on the state of the gastro-intestinal mucous membrane. As soon as signs of its inflammation are manifested, whether it does or does not excite febrile phenomena, we should act as if there was to be no eruption; it is necessary to combat the gastro-enteritis by the proper means, as under any other circumstances. Thus, from the commencement, we should restrain the patient to diet and to the use of acidulated drinks; and if the inflammation be intense, we should apply leeches to the epigastrium. We will thus fulfil the first indication which cutaneous inflammations present; by calming that of the stomach and intestines, the eruption will be more easy and very light.

We know the abuse formerly made of stimulating sudorifics, to bring out the eruption in weak individuals, and we know how many *adynamic* and *ataxic fevers* were the result of this practice. Since the violence of the visceral irritation is the only obstacle to the establishment of the eruption, it is evident that we can only favor this by insisting on the means most proper to moderate it.

When the eruption is completed, and the cutaneous inflammation has brought about a cessation of the febrile phenomena, we should combat it as if it were independent of any internal affection, if it acquire sufficient intensity to demand particular attention. We should especially endeavor to prevent suppuration, by calming the inflammation with warm lotions, emollient fomentations, and the application of leeches around the parts most inflamed.

We have observed that it is especially to the violence of the inflammation of the face that the most serious accidents



in cutaneous inflammations are due. The application of a large number of leeches to the neck, several times repeated, if the desired effect be not promptly obtained, procures then the most advantageous effects. By this method M. Broussais succeeded very often in the treatment of small pox in rendering insensible or almost nothing the secondary fever and cerebral irritation. When the eruption is confluent, he at the same time applies leeches to the epigastrium, for the purpose of preventing the consecutive gastro-enteritis. When other organs are irritated we should also apply leeches on the parts of the skin corresponding to them. Thus, in rubeola and scarlatina, we should combat the angina and pulmonary catarrh by the application of leeches to the superior part of the neck, in the first case—below the clavicles in the second.

When these means, seconded by absolute diet and diluent drinks, have not been able to prevent the secondary fever, it should be treated as if it were primitive; we should return to leeches on the epigastrium; and whatever may be the feebleness of the subject, we should not allow the lightest food before the disappearance of all the signs of gastro-enteritis. By following the method just traced, we should rarely have to deplore fatal consequences from the most serious eruptive inflammations.

### ARTICLE III.—RELATIONS OF GASTRO-ENTERITIS WITH ARTICULAR INFLAMMATIONS.

The relations existing between the irritation of the gastro-intestinal mucous membrane and that of the articulations, are not less remarkable than those we have just noticed between the affections of the former and that of the skin. Their study is of no less importance; for it is to this we owe the recent facts we possess on the nature of a class of diseases which has been the subject of so many speculations, and against which, until very lately, we had no rational treatment. Let us rapidly examine the principal phenomena of arthritis: they will justify these assertions.

The causes of articular inflammations, which are not produced by external violence, may be referred to two orders; the first comprises the action of cold, and especially cold combined with moisture, and the metastasis of any irrita-

tion. To the second we refer improprieties of regimen, habitual luxurious living, the abuse of tonics, and finally, all causes developing gastro-enteritis.

Heat, more or less acute pain, and ordinarily tumefaction, constitute the local phenomena of arthritis. But so strict is the sympathy existing between the articular tissues and the digestive organs, that irritation of the latter is not long in manifesting itself, if it does not already exist, and if it has not produced that of the articulations, which most frequently is the result of it; so much so that many authors have regarded the viscera of digestion as the source of the phenomena of gout. The tongue then becomes white in its centre and red on its edges; the appetite is lost; thirst is developed; in short, the skin is hot, the pulse frequent, and the articular inflammation intense. This state endures for a longer or a shorter time not to appear again, especially if a large articulation has been affected; at other times it reappears at fixed or irregular periods, and then it always presents the development of the same phenomena of irritation in the digestive passages, and in the diseased articulations. These phenomena are more or less marked, according to the sanguine or lymphatic constitution of the individuals, and the standing of the disease. Sometimes cerebral irritation does not exist in the interval of the attacks of arthritis; at other times it is permanent, becomes exasperated, if the latter does not appear at the accustomed periods, puts the patient then in the greatest danger, and diminishes when the articular inflammation appears.

These differences constitute several shades of arthritis, of which authors have made several diseases not acknowledged by them to be of the same nature and designated under different denominations. When the inflammation affects only one large articulation, or when it commences by several small ones at a time, they call it *articular rheumatism*; when it commences in a small articulation, and confines itself to this, or when it then extends to several, it has been named *gout*: and they have also admitted several varieties of the latter, according to the circumstances accompanying it.

We will proceed to establish, as M. Broussais has done, the identity of the different shades of this disease; and to show the part gastro-enteritis plays in the production of its phenomena. We will expose at the same time the opinions

of the author of the *Examen*, on gout. For the purpose of elucidating this article, we shall have frequent recourse to the excellent dissertation of M. Roche on the inflammations of the fibro-serous system of the articulations. I will repeat also in part what I have already said on this subject in an appendix to the second edition of Scudamore's work on gout and rheumatism.

Whatever be the analogies of the characters of gout and articular rheumatism, Scudamore as well as all authors preceding him, have established a division between these two kinds of affections. Without doubt the gout of authors and their articular rheumatism differ greatly from each other ; but do the differences extend to their very nature, to the essence of those diseased states, or are they only relative to accessory circumstances? Like acute and chronic pneumonia, these two forms of articular irritation should be carefully described ; but we should not isolate them, and consider them separately ; because this method, by presenting as different, diseases identical in their nature, consecrates two morbid entities, and, besides the inconvenience of rendering medical theories more obscure, exercises on therapeutics a vicious influence. Thus, by acknowledging that articular rheumatism is an irritation, authors who have distinguished it from gout, have been led to consider the latter as a disease of a different nature ; moreover, those who have, like Darwin, Pinel and Scudamore, recognized an irritation in the latter, have been led to the idea of a specific nature by reason of this erroneous division. Indeed, since they regarded articular rheumatism as an inflammation, and it was the received opinion that gout was another disease, this could not be an inflammation, or the latter must have some specific characteristics not possessed by the other. This opinion has been too generally admitted, and obtains even at the present day, too much credit for us not to attach some importance to its examination and to the necessity of combatting its motives. We shall see that it is only founded on the diversity of causes, of symptoms and of the duration of articular irritations, as if it were only the mode of lesion of the tissues which should serve to establish the nature of diseases.

According to many authors, the appearance of gout is preceded by a chronic affection of the organs of digestion (chronic gastritis,) and only shows itself at first on a small

articulation, whilst articular rheumatism is the result of the accidental impression of cold, and attacks the large articulations, or several small ones at the same time. But M. Broussais remarks, that cold may confine itself to the irritation of one small articulation, and that the simultaneous affection of several small articulations and a large one may be produced by inflammation of the digestive passages. We sometimes see individuals in whom all the large articulations, or one of them only is affected with inflammation, and, if we interrogate them on the succession of symptoms which they present, we learn that those of gastro-enteritis were manifested sometime before those of arthritis. Let the articulations be covered with leeches, let the general bleeding be practised, and we succeed but very rarely in extinguishing the articular irritation, or, if we succeed in overcoming that of one articulation, it soon appears in another ; whilst diet, diluent drinks, and the application of thirty or forty leeches to the epigastrium, make this assemblage of pains rapidly disappear. Let us also add, that whatever be the influence of inflammation of the digestive organs over the production of the form of articular irritation called gout, it is very rare that it is sufficient to determine alone its development, which is ordinarily produced by the action of cold, especially when it succeeds suddenly to heat. Thus we know that paroxysms of gout are much more frequent during the equinoxes, a period of the year in which rapid atmospheric vicissitudes are usual ; we know also, that this affection is rare in warm countries and seasons, although inflammations of the digestive mucous membrane are much more common under these circumstances than in hot seasons and climates. When an articular irritation is developed under the influence of cold, the paroxysms may be repeated, it is true, under that of the stimulation of the digestive passages, as we frequently see the case after table excesses ; but we can conceive of it so much the more easily, since by a law of pathological physiology, often recalled in the course of this work, the sympathies produced by the phlogosis of a part are reflected principally on those already irritated, or on those which have before suffered from irritation ; because organs previously irritated, are more apt than others to contract a new irritation. This point of the economy, to which tend the stimulations received by all the others, is not the most debilitated as has been asserted. We have remarked in another place,



that the debility of one part was an opposite disposition to that favoring the establishment of irritation.

The seat of the articular inflammation cannot merit any consideration in establishing a difference between gout and rheumatism, since we have already seen cold without gastritis, inflame a small articulation, and gastritis produce irritation of a large joint. Besides, as M. Roche observes, this commencement by a small articulation, is peculiar to *regular gout*, and consequently cannot serve to characterize *irregular gout*, which sometimes shows itself in the large articulations, sometimes in a great number of small ones at a time. We should then only call *gout* that which is regular. It follows that the causes and seat of articular irritations cannot make differences in the nature of the disease, but in its forms only.

Those which the symptoms present in each one of these latter have also served to establish the distinction we combat ; but it would only be necessary to reflect on the influence of individual dispositions, the various shades of irritation, the different nature of the two articular tissues, which may be affected separately, to appreciate the nullity of a character established on a basis not more solid. These differences are observed in the inflammations of all the tissues ; do they think proper, on this account, to make each one of their forms so many different diseases ?

They have laid down the periodicity of gout as one of its distinctive characters ; but how shall we distinguish this from periodic rheumatism, which others admit ? and besides, the admission of *wandering gout*, *continued gout*, *irregular gout*, would suffice to overturn this principle ; unless they assert that regular gout alone is *legitimate*, and that the others are *bastard gouts*. However this may be, such a want of solidity is there to this theory on gout and articular rheumatism, that its upholders themselves acknowledge its incertitude, and the difficulty of distinguishing one from the other. It is not in the diversity of causes, of seat, and of symptoms of diseases, that we should seek their differences—it is on their nature itself that it should be established ; and this can only be done by the comparison of the phenomena of life, in the state of health and disease, with the alterations found in the tissues after death.

We say also, that rheumatism terminates almost always by resolution, and that this is not the case with gout ; but

we may say as much of each particular inflammation; and we do not grant to them a different nature according as they terminate or not by resolution. Besides, remarks M. Roche, of what utility is such a character to the physician? Must he then wait until the inflammation be entirely dissipated, or until it have left a concretion in the joint, in order to ascertain whether it is gouty or rheumatic? In spite of all the motives which have engaged physicians to separate gout from articular rheumatism, the identity of these two forms of the same affection is then well demonstrated.

Few diseases have been as much the subject of erroneous theories as gout; it is only in later days that they have known how to appreciate its nature, and to account for all the phenomena it presents. Cullen and Brown had already pointed out the co-existence of the affection of the digestive passages with that of the articulations; but, in considering the first as an *atonic* or a *dyspepsia*, (of which the lesion of the articulations was only a symptom,) they diminished in nothing the obscurity enveloping the knowledge of gout, and they were led to a treatment directly opposite to that it requires. Darwin, and after him Scudamore, have approached nearer the truth; but their theory also presents two capital errors—1st. If they have acknowledged with other physicians the inflammatory character of the articular affection, they have regarded it as a peculiar specific irritation, differing from all others, in a word, *gouty irritation*; and if they have rejected the *gouty humor* of their predecessors, they have preserved the specific gouty state of Barthez; they thought that the *being gout*, transported itself into the viscera in the cases where a metastasis of the articulation takes place; and all these erroneous principles have led them to conclude that it should not be treated like other irritations. In a word, they have been as much ontologists as their predecessors, since they have seen in this disease a morbid entity not existing. Nothing goes to prove the specific nature of arthritic irritation; it should consequently be ejected—the more as its admission is entirely superfluous in accounting for its different phenomena. Those who admit a *gouty principle*, give as a proof of its existence, the presence (in the viscera of certain gouty patients, who have been affected with *misplaced gout*, that is to say, who have experienced metastases of

articular irritation,) of tophaceous concretions, resembling those often met in the articulations. But according to the remark of M. Roche, these facts are less numerous than contrary facts, and cannot serve to establish a general principle. We find calcarious concretions in the lungs and members of men who have never had articular inflammations, and there is no inflammation which may not leave after it tophaceous concretions, without having been preceded or accompanied by gout. 2d. Scudamore has referred the primitive seat of the disease to the liver, in which the *gouty affection* is, according to him, elaborated, to be spread from thence to the other points of the economy; and he has spoken so vaguely of the condition of the liver, that he seems rather to see there an obstruction, a peculiar morbid state, than an irritation. Besides, they have been entirely ignorant of the connexions existing between this gland and the duodenum, and attribute to it exclusively, an affection which it divides with the stomach, as we have already established.

If we now review what we have said on the nature of gout, we shall see that this disease is a form of arthritis, united to a chronic inflammation of the digestive organs, that is to say, *gastro-arthritis*. The inflammatory nature of the articular affection can no longer be called in question; its symptoms show all the characters of inflammation, and we can only refer to the latter, lesions found in tissues which have been affected with gout. When the latter disappears suddenly, or does not show itself at its accustomed periods, it is replaced by visceral irritation, and *vice versa*; and this single fact would have been sufficient to discover its true nature, if they had referred to irritation these visceral affections; but they were, on the contrary, attributed either to debility, obstructions, or a peculiar morbid state. But now that we understand gastro-enteritis, we can refer to this affection alone the symptoms which are joined to those of arthritis. Articular irritation is often preceded by that of the digestive passages, and in cases where the former is primitive, the latter is not slow in being sympathetically developed. What we know of the strict connexions existing between the digestive organs and the articulations, and from the examination of the causes of gout, which we almost always see transmit their action on the former, we can account easily for these phenomena.

In order farther to establish the part played by gastro-enteritis in gout, we should also remark, that it is very frequently imprudences in regimen which determine the appearance of the paroxysms of gout, whilst a vegetable regimen and water for drink, render them more rare, and not unfrequently produce a radical cure; and that when patients who were submitted to it have thought they could return to their former regimen, because for a long time they were free from their sufferings, they have soon after experienced new attacks.

Before establishing the curative indications presented by gout, we should speak of the gouty constitution, of its hereditary nature, and of the diseases which have received this title.

We know that the organic systems, and the organs enjoying a more energetic action than the others, are those which receive most easily the influence of stimulants; for the more energetic is the excitement of a part, the more easily it rises to the degree of disease. These predominances constitute, as we have said elsewhere, the temperaments and idiosyncrasies; and, there are individuals, in whom the articulations easily become painful, whether they be submitted to the action of stimulants, or the sympathies make them participate in the suffering of another part.—This preponderance, joined ordinarily to that of the sanguine system, is as marked in subjects as that of the liver, or of the nervous or lymphatic system in others; and M. Bégin has properly proposed to admit a fibro-articular idiosyncrasy. This predominance may be transmitted by way of heritage, like the features of the face, and it is to this that the predisposition to gout is reduced, and the pretended hereditary nature of this affection which is only like that of all maladies, an aptitude to contract it; there can be no hereditary diseases except lesions transmitted by parents, and which are at the same time congenital; for patients have not the germs of gout, of a phthisis, &c. which remain inert for a time, and then develope themselves. And it is so true, that there is nothing hereditary but the predisposition, that this aptitude may be corrected and destroyed by proper hygienic means. The infants of rich persons, observes Brown, judiciously, inherit gout with the fortune of the father; but let them be disinherited, and they will not have gout.



As we have already said, this form of articular irritation is very often joined to a visceral inflammation, and the existence of the latter is always present when the articular affection is chronic. Those who have admitted the gouty humor, and who see in this disease a morbid entity, have asserted that all those affections which gouty patients experience, have a special character, analagous to that of the articular lesion—are in a word, *gouty affections*. It is difficult to conceive of so absurd an instance of ontology; how can they prove that a lesion, which only presents certain determinate characters, because it affects a particular tissue, will still possess them when it is seated in another of a totally different nature? Let us examine the ground work of this strange theory. They have pretended to discover the gouty character in diseases arising in individuals who had never had gout, only because their parents had been affected with it, and because they presented the gouty constitution, which is also the apoplectic constitution, the hemorrhagic constitution, &c. Under these circumstances, they have said, we should think that the disease which presents itself, is only a *masked gout*, if it has been produced by the ordinary causes of this affection. It would seem, from this language, that gout is excited from specific agents; but, as they have not been demonstrated, and as nothing can lead us to suspect their existence, we will abandon this proof. We will give to it the same character, add they, if it presents great mobility; for gout itself is very mobile. Why then should it not be also an eruptive or erysipelatous affection; for these frequently change their seat? We find also here a proof of the viciousness of this doctrine which looks only to symptoms, and which completely passes over the action of the organs. It was impossible, when constructing on such foundations, to escape from ontology; since, to explain each phenomenon of diseases, it was necessary to attribute to each one of them a particular character, producing certain results; which was, in reality, making diseases *entities* possessing, like inorganic bodies, peculiar properties; thus they attributed the frequent displacements of gout to the disease possessing a character of great mobility. This explanation may appear a little silly; but let us pass on; diseases change seat because an organ may sympathetically contract an irritation of a degree superior to that of the excitement with which another part is affected, and

thus produce a revulsion of the latter ; and if gout presents mobility more frequently than other diseases, if the irritation affects successively several articulations, if it disappears from these and shows itself in the viscera, it is because the different articulations have strict sympathies between each other, and are united at the same time to the gastro-intestinal mucous membrane, by intimate connexions. Finally, say the defenders of the *gouty principle*, it will not be permitted to doubt with regard to the nature of the disease, if the latter has been terminated by a paroxysm of gout, although it should be the first which the patient has experienced. This proof, to which they give great importance, is, however, as futile as the others. We know that the first paroxysm of a gouty irritation may be produced by the impression of cold, or by a visceral inflammation. In the cases of which we speak, there has been simply an eventual coincidence of the appearance of a paroxysm of gout, and of the irritation of a viscus of which the articular affection has become revulsive, the more easily perhaps when sinapisms have been applied on the feet.

If they are determined to see gout in the diseases of individuals who have never been affected with it, or who have not experienced a paroxysm for a long time, *a fortiori* have they recognized this disease in all the affections of persons actually suffering with arthritic pains ; hence the expressions of *retrocedent gout*, *gout transported to the stomach, to the brain*, &c. But in order to affirm that gout itself, that is to say, the assemblage of phenomena bearing this name, may occupy different tissues, they establish as a principle, a fact which cannot even be called in question, viz : the specific nature of gout, the existence of a peculiar morbid principle. If they abandon this hypothesis, they will be forced to acknowledge that the morbid state called *gout*, only presents itself with the characters accompanying it, because it affects sero-fibrous tissues, and that it can no longer possess these characters, when seated in a mucous membrane, for example.

The pretended metastases of gout enter into all the other phenomena of revulsion, and all that has been written on this subject is reducible to the following considerations of pathological physiology—1st, a viscus affected with a chronic inflammation, consequently more exposed than any other to increase of irritation, receives sympathetically the influence

exercised by the phlogosis of an articulation, concentrates it on itself, and this is hardly established before it disappears, because the former has produced a revulsion of it ; 2d, at other times a healthy organ becomes the seat of this last, because the inflamed articulation has made it participate sympathetically in its irritation, and because this secondary affection has become stronger than that exciting it ; 3d, during the attack of an articular irritation, or at the time when the periodic return of this attack should take place, if any cause whatever of irritation has acted on a viscus, has produced there an inflammation, which has become more intense than that of the articulation, its march is arrested ; 4th, by irritating the articulations which were the seat of the irritation, we may reproduce it and give rise in this part to a second revulsion, putting an end to the visceral inflammation. We will not stop to combat the multiplied divisions which have been made of gout ; these are only varieties of the same disease, whose phenomena are different according to the mode of action of causes, the constitution of the individual, the state of the viscera, &c. Thus they have admitted an atonic gout, because the articular pains were slight and transitory, and because there existed, on the contrary, symptoms of gastric irritation, attributed by them, to debility of the stomach, or because the local affection was joined to a state of general debility.

If all these errors had no other tendency than to spread obscurity over medical theories, it would doubtless be less important to notice them ; but they have exercised a fatal influence over the treatment of diseases, which we also see founded on the principles of humoralism and Brownism. Let us explain the principal rules to which it should be submitted.

We should attach more importance to the prevention of a disease in proportion to the difficulty of curing it ; since articular irritations are caused by alternations of heat and cold, and irritation of the digestive passages, patients should be subtracted as much as possible from the influence of atmospheric vicissitudes ; they should be restrained to a sober regimen, should resort to habitual exercise, and should also avoid other causes of irritation, such as prolonged disputations, immoderate coition, &c.

When the irritation is established, if it be intense, we should attack it actively by the whole series of antiphlogis-

tic means. If the subject be robust, if the irritation be febrile, we should commence by a general bleeding, and at the same time, apply a large number of leeches to the phlogosed joint; under other circumstances, we should confine ourselves to the employment of the latter. If the articular irritation seems to be under the influence of a gastric irritation, which we recognize by the loss of appetite, redness of the tongue, thirst, &c. and when these signs exist, before the appearance of the affection of the articulation, we should apply at the same time leeches to the epigastrium; if the gastritis be consecutive, we should follow the same plan; if it present a considerable degree of intensity, we should insist on local bleedings, until we see the heat and pain of the articulation much diminished. At the same time, and during the whole course of the attack, we should restrain the patient to a severe diet; and, after the cessation of the symptoms, we should subject him to a sober regimen, and to all the means proper to prevent the return of the paroxysm, to be combatted always in the same manner.

When the disease is of long standing, when the articulations are the seat of habitual pains, when the viscera are affected with chronic inflammations, we can no longer oppose the paroxysms by such energetic means, which would, moreover, have but limited efficacy. However, we cannot remain idle spectators of the sufferings of the patient, and we should still apply on the articulation a few leeches, to calm the phlogosis. Scudamore vaunts very much in these cases the effects of sedative topicals; but their success will be much more marked and constant, if they are preceded by the application of leeches, the utility of which he has not appreciated. We should not renounce antiphlogistic remedies, because the gout is inveterate; if they do not perform a cure, they at least calm the sufferings, by abridging the duration of the paroxysms and by diminishing their intensity. The employment of tonics, returning to a rich diet, &c. besides that they produce contrary effects, aggravate the visceral inflammations, and finish by producing disorganizations, eventually fatal to the patients.

When the articular irritation is superseded by a visceral inflammation, we should at once cover the articulation with a stimulating poultice, for the purpose of producing there a



revulsive excitement ; at the same time, we should oppose the internal affection by proper antiphlogistic means.

In short, the principal object the physician should have in view, is to destroy the visceral irritations which almost always exist in this disease, and which accompany it constantly when of long duration. If the gastric affection be not inveterate, we shall succeed completely in curing gout by diet, local bleedings, aqueous drinks, absolute abstinence from stimulating food, wine, coffee, and alcoholic liquors.— Darwin and Scudamore have adopted principles widely different from these ; for, by placing the primitive seat of the disease in the liver, by admitting a bilious plethora, obstructions, &c. they have been led to the purgative treatment of their country. They palliate by these means the disease, because evacuations ordinarily relieve in chronic inflammations of the abdomen ; but by permitting the gastro-hepatic phlogosis to become inveterate, and the paroxysms of articular irritation to be repeated, they can no longer arrest the march of the disease.

#### ARTICLE IV.—RELATIONS BETWEEN GASTRO-ENTERITIS AND CEREBRAL IRRITATIONS.

The brain, which is the regulator of functions, the agent of sympathies, receives impressions from all of the organs ; no function can be disturbed without this viscus receiving some impression from it, and without its action being modified ; but there is not one which maintains with it such intimate relations, in health and disease, as the stomach.

One of the most remarkable points of the physiological doctrine is, without doubt, the knowledge of the relations existing between the irritations of the digestive organs and those of the brain and meninges. Whilst the labors of M. Riobé, Rochoux, Parent, Martinet, Serres, Rostan, Abercrombie, and Lallemand, have cleared up the nature of the different encephalic affections, M. Broussais has shown that irritation was the cause of almost all the alterations we meet in the brain and membranes, that this irritation was often consecutive to a gastro-enteritis, and thus established the treatment of these diseases on new curative indications.

We will not here present the description of cerebral irritation and its different forms ; it would be too extended an

undertaking for us to expose the revolution produced in this part of pathology, covered as it was but a few years since with the deepest obscurity. We could not do otherwise than relate what we find on this subject in the two *Examens*, and in the excellent work of professor Lallemand ; we will confine ourselves here then to an exposition of the opinions of M. Broussais on the relations of gastro-enteritis and cerebral irritations, and to the presentation of a series of proofs putting these proofs beyond doubt.

After having proved that apoplexy, mania, paralysis, catalepsy, tetanus, and epilepsy, should be classed with cerebral irritations ; that *ramollissements*, and atrophies of the brain, were, as well as purulent collections, serous effusions, and scirrhus indurations, an effect of inflammation ; that all cerebral irritations, whatever form they present, pains, convulsions, mental aberrations, &c. terminate finally in paralysis, idiotism, and apoplexy ; and that the disorders which the cerebral apparatus then presents, should be referred to inflammation and its consequences. M. Broussais establishes as principles, 1st, that most frequently, and in cases where cerebral irritation is traumatic, it is consecutive to a gastro-enteritis ; 2d, that cephalalgia, delirium, and convulsions provoked by stimulation of the mucous membrane of the stomach and small intestines, are the immediate effects of a sympathetic irritation of the brain, which may be considered as the first degree of inflammation of this viscus ; 3d, that very often in the course of gastro-enteritis, this first degree progresses and rises to inflammation, whether in the brain itself, or in the meninges ; 4th, that, in subjects whose brains are predisposed, the sympathetic influence of the inflamed mucous membrane suffices to raise the cerebral irritation to the degree of inflammation ; then the cerebral symptoms predominate over those of gastro-enteritis, and on autopsy, we find in the brain, or its envelopes, traces of acute inflammation ; 5th, that in cases where the cerebral irritation is primitive, it cannot endure for a long time, nor rise to a high degree without producing gastric irritation, and that this sympathy of the inflamed encephalon over the stomach and its appendages, always produces a certain degree of gastritis, and sometimes hepatitis ; 6th, that mania is always the result of a cerebral irritation, and that, when the latter has not been produced directly, it is sympathetic of gastro-enteritis, which may itself have been developed and kept up by another inflammation.

In another chapter, we have already shown the sympathies existing between the digestive passages and the brain; let us add to what we have already said, other facts which will render incontestible the principles of the professor of the Val-de-Grâce, on the connexion of their irritations.

In the picture we have traced of the phenomena of gastro-enteritis, we remark signs of cerebral irritation from the commencement of the disease; we see them increase at the same time with the intensity of the gastritis, from the head ache which accompanies *embarras gastrique*, up to the delirium and convulsions, observed in most cases of poisoning from corrosive substances. We have shown that the group of symptoms called *ataxic fever*, were composed of the signs of gastro-enteritis and encephalitis; finally, we repeat, that the researches of M. Scoutetten have established the traces of irritation of the meninges—always seen accompanying those of gastro-enteritis.

Head ache, delirium, convulsions, in fine, all the signs of encephalic irritation complicating gastro-enteritis, called *ataxic fever*, often disappear after the application of leeches to the epigastrium.

In the etiologic table of cerebral lesions, given by authors, we see table excesses, wine, acoholic liquors, and coffee, placed near wounds of the head, insolation, chagrin, &c.

The signs of gastro-enteritis make a part of the assemblage of symptoms called *cerebral* or *apoplectic fever*.

Redness of the tongue, thirst, dryness of the mouth, sensibility of the epigastrium, &c. are almost constantly seen in encephalitis and meningitis. *Adynamic fever* is often developed at the close of cerebral affections, and particularly of apoplexies. Habitual anorexia, constipation, thirst, and a foul state of the tongue, are almost always seen in chronic cerebral irritations.

All surgeons have observed that *embarras gastrique* and bilious fever were amongst the most frequent accidents complicating wounds of the head, and that there were very few of these which were not followed by vomiting and other signs of irritation of the stomach.

Examination of the dead bodies of individuals affected with cerebral diseases, has almost always displayed traces of inflammation in the digestive passages, and we have always met them in those who had had fever. M. Serres found in apoplectis, traces of gastro-enteritis, but he

has attributed them to the influence of stimulating treatment.

It is particularly by the exasperation of the symptoms of cerebral irritation in *adynamic and ataxic fevers*, that the bad effects of stimulating treatment are manifested.

M. Lallemand declares that emetics, empirically recommended in the treatment of paralysis, may give rise to encephalitis, and, *a fortiori* increase it when it exists. He has seen effects of this kind follow the administration of nux vomica; he shows that tartar emetic, in the ordinary doses, and much more in a large dose, augments the cerebral affections when it produces vomiting, and exasperates the gastro-enteritis when it does not vomit; that coffee, arnica, acetate of ammonia, bark, camphor, ether, musk, and nux vomica, administered in these diseases, produce agitation, convulsions, tetanic rigidity, and adynamia. In the cases reported by this professor, we see, after the administration of purgatives and tartar emetic, the tongue become dry and red, the skin hot, thirst developed, and M. Lallemand shows clearly that encephalic inflammations alone do not produce fever.

We meet in authors but very few cures of cerebral diseases treated by tonics; since the origin of the physiological doctrine, we have, on the contrary, met a great many which have been obtained by the antiphlogistic method.

To these facts I shall also add some others which I take from the memoir of my friend, Doct. Richond, on apoplexy. This work, filled with judicious views on this disease, leaves nothing to desire on the subject before us.

Many physicians have contended that the phenomena of drunkenness were principally sympathetic of irritation of the stomach; M. Richond shows the justness of this opinion, which has found a great number of opponents who attribute the cerebral excitement to the action directly exercised on the brain, by absorbed alcoholic principles. The following considerations do not permit us to misconceive the influence of the stomach on the brain in the production of this state.

1. After vomiting and the ingestion of cold aqueous liquids, we see drunkenness disappear very rapidly.

2. The ingestion of a few drops of ammonia in a glass of water, by changing the mode of excitement in the mucous membrane, rapidly produces the same result.



3. If absorption of the alcoholic principles was the cause of intoxication, it is evident that it should be more rapid in proportion as the liquors drank contain more of these, but it is not always so ; certain wines, such as Rhenish and Champagne, contain very little, and produce intoxication often in a shorter time than those of Languedoc and Roussillon, which contain a great deal more alcohol.

4. We know also, that when wine is changed several times during a repast, one becomes intoxicated more rapidly than when he drinks always of the same ; and it is evident that, in the latter case, the gastric mucous membrane becomes habituated to the contact of the same stimulant, whilst several excitants irritate it more, although they be not more considerable in quantity.

5. Intoxication is rapid in proportion as the gastric sensibility is great ; thus, it is more prompt in women and children, in convalescents, and when the stomach is empty, &c. We know that individuals, habituated to excesses, may ingest enormous draughts of alcoholic liquors without becoming intoxicated ; it is evident here, that the effect of the stimulant is less marked on account of habit. It is objected that the empire of the latter is not less over the irritability of the brain than over that of the stomach ; let them explain then, why some individuals become intoxicated with the greatest facility when there is a gastric irritation ? We know that professed drinkers arrive at a point at which the least quantity of alcohol plunges them into intoxication, and we all know that these men are affected, after a time, with chronic gastritis. These facts prove then, that it is the stomach, rather than the brain, which becomes habituated to the stimulants.

6. Finally, we read in the *dictionnaire des sciences médicales*, a fact strongly favoring the opinion we sustain. Some sailors, who had remained for a long time in a state of entire deprivation, fell down dead in a state of intoxication, after having taken a single spoonful of brandy. We cannot refuse to attribute this extraordinary phenomenon to the exquisite sensibility of the stomach, developed by abstinence ; for, however active we may suppose absorption, however strong may have been the stimulation exercised by the alcoholic molecules, it is impossible that, disseminated in the mass of blood in so small a quantity, they could produce such an effect by stimulating the brain directly.

Investigating the mode of action of intemperance, of rich diet, and other influences of the same nature, in the production of apoplexy, M. Richond asks if these causes only give rise to this malady by favoring, as is said, the development of a plethoric state. He remarks, that admitting this explanation, it will always remain to be known, why sanguine congestions, rendered more easy by the state of the plethora, take place in the brain in preference to other parts; and supposing even, that they could give a satisfactory reason for it, we should still have a right to demand, why these congestions produce apoplexy; for we know that, to be produced, this disease necessitates a preliminary irritation, without which it would be more frequently observed in the efforts during fits of coughing, lifting, labor, &c.; it is more exact then to attribute the influence exercised by these causes over the production of apoplexy, to irritation of the stomach which they develop very frequently, and of which the frequent indigestions and *embarras gastriques*, so often presented by intemperate men, are certain proofs.

“Is it not by aggravating or by producing gastric irritations,” says M. Richond, “that mineral waters act, which are so often fatal to paralytics and apoplectics, as Willés and Bordeu have observed? that irritating medicines, such as emetics, purgatives, and tonics, employed so frequently against this disease, are often followed by fatal accidents? Is it not for the same reason that persons who experience the precursory symptoms of apoplexy, cannot commit the slightest impropriety in regimen, without having vertigoes, and without having to fear the explosion of the disease.”

Here M. Richond supports his opinion with the authority of a great number of authors who have established the influence of these causes over the production of apoplexy.—This physician undertakes then to show the influence exercised by acute and chronic gastro-enteritis, over other cerebral diseases. We will not follow him in all these details, presented by us on a former occasion; but we will stop to notice with him those lesions, vaguely designated under the name of nervous diseases. One may easily be convinced of the existence of gastric irritation in these affections, by analyzing the symptoms given by most authors of them.—In the treatise on nervous diseases, by Whyt, we find the following picture of their phenomena: “Pungent heat in the belly, acid eructations, disgust, aversion for food, fre-

quent vomiting, indigestions, a sensation of vacuity about the region of the stomach, capricious desires for food, tension, constriction at the epigastrium, pulsations in the abdomen, colics, flatulency, and borborygmus."

M. Richond shows that the nervous phenomena of hypochondria emanate from the digestive passages affected with chronic inflammation. We have already furnished proof of this assertion in the history of chronic gastritis.

When we consider the causes of insanity, we see a great many which exercise their influence on the digestive passages: and if we examine its phenomena, we also see that the greater part of those connected with delirium relate to their irritation. We often see indeed, paroxysms come on after eating, the delirium become more continued and more complete under the influence of exciting regimen, and contrary effects produced by a severe regimen. "The nature of the affections giving rise to periodic mania, and the affinities of this disease with melancholy and hypochondria, should make us presume that the primitive seat of it is almost always in the epigastric region, and that it is from this centre are propagated, as by a kind of irradiation, the paroxysms of mania.—Insane persons, at the commencement of the paroxysm, complain of constriction in the epigastric region, disgust for food, obstinate constipation, and a sense of internal heat, which makes them desire refreshing drinks." As continued mania differs only in type from that of which M. Pinel speaks, we may reasonably apply to it what he says of the latter.

## OF ASTHENIA.

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We have seen, in the commencement of this work, that the vital action may undergo two modifications, opposite in their essence, acknowledging sometimes the same causes, whose results are not unfrequently confounded. These two states are, superexcitement or irritation, and sub-excitement or debility.

Asthenia is that state of an organ in which the energy of the vital action is below the normal type ; that is to say, below the degree necessary for the purposes of its nutrition and function. This condition has only been well understood since we possess positive notions on the action of modifiers on the organs, on the particular vitality of each of them, and on their sympathies. Ignorant of all this knowledge, Brown considered the economy *en masse*, and established, that excitability was one and indivisible, and that consequently, excitement (vital action) was identical throughout the organism, and that it could never augment in one part whilst it diminished in another, and *vice versa*. Setting out with these principles, the Scotch reformer only saw diseases at a distance, considered only the exterior of man, and seeing muscular weakness come on at the commencement of almost all lesions, without taking account of the nature of their causes, he was led to regard only the asthenia and the indication for stimulating in almost all diseases. If, in proclaiming that life was only kept up by stimulants, Brown laid the foundation of correct physiology ; if, by the developments given to this truth, the science owes to him the triumph of vitalism over the vain theories of humoralists, mechanicians and animists, we should acknowledge also, that all the applications made by him of this great principle to physiology and pathology, were very unfortunate, and that they established doctrines quite as erroneous, and still more dangerous than those which he overturned. By establishing the unity of excitability and of excitement, the Edinburgh physician could no longer arrive at any truth ; he threw himself into the path of error.



The labors of Bichat raised an insurmountable obstacle to the invasion of Brownism ; they did not, however, produce at once the great results which they were destined to furnish a few years after. Although physicians were more struck with the necessity of searching out the seat of diseases, of studying the sympathies of the different organic tissues, and the lesions they may present, they did not the less continue, however, to admit general diseases, and to regard as asthenic most of those affecting weak subjects, which come on under the influence of causes apparently debilitating, and sometimes disappearing under the use of tonics. They rejected the asthenic inflammations of Brown, but they created adynamic febrile states : thus, what they destroyed on one side, they built up on the other ; and at the very time when Brownism was the subject of the most violent attacks, it insinuated itself into all the theories, and directed the practice of all physicians.

There remains nothing for us to do towards circumscribing asthenia within the bounds in which it should be restrained ; the principles presented by us on irritation considered in general, the description given of the different forms of gastro-enteritis, the relations we have shown between this inflammation and other irritations, and finally the discussions in which we have indulged whilst attaching to superexcitement a crowd of diseases, before attributed to debility, liberates us from the necessity of making new efforts to prove that, in the doctrines M. Broussais has overturned, this modification of vital action played a much too important a part ; we will then make it the subject of only a few general considerations.

Asthenia should be studied after the same principles as irritation. It must be considered in each organ in particular and in each organic system, the mode of action of the causes producing it examined, and the influence exercised by debilitated parts over all the others.

Asthenia results 1st, from the partial or total withdrawal of the stimulants which put in action the irritability of the tissues ; 2d, from the irritation of another part. In the second case, it is secondary, or indirect ; in the first, it may be direct, or produced sympathetically, or, to speak with more exactitude, indirectly. We know indeed, that the stimulants which keep up the vital action, are applied directly to the organs, or that the latter receive sympathetically, the

stimulation exercised by other organs. They will fall then into a state of debility more or less profound, if one of these two sources of irritation be withdrawn. It is thus that the stomach will become affected with asthenia, if it receive but a small quantity of food, containing little nourishment, and be constantly in contact with mucilaginous fluids; it will then no longer enjoy the degree of action necessary to the exercise of its functions. Now, this organ, entertaining with all the others the closest relations, and the stimulation which it undergoes in a state of health, extending to the whole economy, the other organs, and especially the brain, the heart and muscles, are no longer sufficiently stimulated, when the stomach is in a state of asthenia, and their respective functions languish; for the excitation which it sends to them, is indispensable to the continuance of their action.

Asthenia produced by the withdrawing of stimulants does not always continue for a long time; the debilitated part may react, and this reaction produce an irritation; it is thus, that after the action of cold, which makes the tissues pale and diminishes their sensibility while it acts, we see redness and heat, and often a real inflammation appear.— Other circumstances may determine irritation in the tissues affected with asthenia; it is thus that we have seen, on a former occasion, when treating of dyspepsia, phlogosis of the stomach take the place of debility, because aliments remaining for a longer time than in its cavity, and not being completely elaborated, fatigue and irritate the mucous membrane.

Weakness depends oftener on the concentration of vitality in another part, than on defect of stimulation. We will not repeat here what we have already said on this subject, when treating on the phenomena of revulsion; we established then, in an incontestable manner, that when the forces are concentrated in one part, one or several others fall into a state of asthenia. This is the reason why the first sensation felt by patients, is that of weakness, when a viscus is inflamed, and it is thus that gastro-enteritis produces muscular prostration; and reciprocally the excitability diminishes in the gastro-intestinal mucous membrane when it is increased in the muscles. We know that the stomach may support, without being inflamed, the most energetic stimulants in frightful doses, during traumatic tetanus.— There is, however, a degree at which stimulation is no

longer innocent: I have several times seen violent gastro-enteritis spring up during the course of this terrible affection, after the administration of musk and camphor; and twice, I have seen in the dead body the gastric mucous membrane, disorganized after the use of the tincture of cantharides, recommended latterly in tetanus, by a German physician, who wishes thus to establish a revulsion on the urinary organs.

From the knowledge of these phenomena results a very important principle, already established at the commencement of this work, viz: that, under the influence of debilitating causes, weakness is never general; that irritation and asthenia are almost always met with at the same time in the same individual. We have just seen, indeed, that the latter is most frequently the result of inflammation, and, in cases where it is produced directly or secondarily, by the removal of stimulants, it still very often happens that it is accompanied by irritation in other parts; thus diminution of action in the skin, produces an increase of that of the pulmonary mucous membrane; for in the same manner as the inflammation of one part gives rise often to asthenia in another, the latter produces irritation of organs having an inverse relation of action with those debilitated.

We know that tissues which have been inflamed often, preserve for a long time great sensibility, and even a chronic irritation; sometimes an appearance quite opposite takes place: we see, in the interval between the paroxysms of certain intermittent gastro-enteritis, the tongue become white, moist, and broad; a circumstance which, joined to want of appetite for food and drink, to uneasiness and weakness, denotes a state of asthenia of the stomach. We sometimes observe the same phenomena in lymphatic individuals, after acute gastro-enteritis, which has necessitated long abstinence and copious sanguine evacuations. In tissues affected with organic degenerations, they might suppose sometimes also, that asthenia has taken the place of irritation; but, on considering with a little attention what passes in these cases, one will soon discover this opinion to be erroneous. Let, under the influence of irritation, there be developed in a red tissue, a fibro-cartilaginous tissue; the latter will possess a less elevated degree of vitality than the part which it has displaced; but this degree being in rela-

tion with the organization of the new tissue, we cannot say that it is in a state of asthenia.

Doctor Boisseau formerly asked if asthenia of an important organ does not promptly bring on asthenia of all the others, and if the bond uniting the organs together, would be less close in this case than in that of an irritation? What we have said of the debility experienced by a part when it is deprived of the stimulation it receives from an organ actually debilitated, answers this question. Asthenia cannot be transmitted in the same manner as irritation, by nervous irradiations; it extends, on the contrary, only by the cessation of the sympathetic influence which the first exercised over the second.

In order thoroughly to comprehend the phenomena of asthenia, we should recollect that each organ presents two orders of movements, the one relative to its nutrition, the other to its function. Asthenia may manifest itself by diminution of the activity of nutrition, or by that of functions; we will call the first, with Boisseau, *asthenia of nutrition*, and the second, *asthenia of function*—the latter may be connected with the former; it is thus we see atrophied muscles deprived at the same time of the faculty of contracting; but more frequently the diminution or abolition of the function depends on the exaggeration of organic phenomena; in other words, the asthenia of function of an organ, is most frequently connected with its inflammation; thus the inflamed stomach is no longer fitted for digestion: it is the same with the kidneys in the secretion of urine; the muscles, for their contraction; the brain, for the cerebral functions; the eye for vision, &c. If they had established this distinction, they would not have stimulated the organs whose functions were languishing, and they would not have criticised the definition of a nosographer who has said inflammation was the exaltation of the vital properties; a definition which would be exact, if he had substituted the expression *vital action* for that of *vital properties*.

Asthenia of nutrition may produce asthenia of function; but it can never produce its exaltation. Abolition of the function of an organ may also bring on diminution of its organic phenomena; it is thus that loss of motion in the muscles of a limb is followed by atrophy, because the function itself is a stimulant for the organ executing it, as Brown has well established. It is remarkable, that in general the



causes producing exaggeration of organic phenomena, produce asthenia of function, that those calculated to give to the latter more activity, act in an inverse manner, when compared with the former. We have just seen that inflamed organs were no longer fitted to the execution of their functions; the excess of its exercise, and the too long continued action of stimulants produce the same result. We know that amaurosis is frequent in individuals who are by their profession exposed to the action of strong light; that venereal excesses no longer permit but feeble erections; that impossibility of moving is the result of muscular contraction, too long continued; and that exclusion of light, continence and repose restore to the retina its sensibility, to the penis its erectile power, and to the muscles all the force of their contractions.

The treatment of asthenia is very simple, when we know how to trace it to its cause; it is evident, from the preceding considerations, that but two indications are presented: 1st, when the debility is the result of the subtraction of excitants, to restore to the organ which has been deprived of them its natural stimulants; sometimes to recur to more energetic stimulants, or to stimulate the organ whose primitive debility has brought on secondary asthenia in another part; 2d, when it is the consequence of an irritation, to overcome the latter and to stimulate the debilitated organ, if this can be done without adding to the irritation of the other.

The first indication is always easy to fulfil, but it is necessary to use the greatest circumspection in the employment of excitants; debilitated vitality resumes its normal type with the greatest facility, whereas we are never certain of destroying the inflammations which we may give rise to by the abuse of tonics: we should fear it the more, since, as we have already established, the indication for stimulating rarely presents itself alone; there exists often, at the same time, a point of irritation which we should be cautious not to exasperate, or we have to fear the reappearance of the inflammation, during the treatment of which asthenia came on. It is never necessary, under these circumstances, to recur to powerful tonics; we should only restore to the debilitated organs their natural stimulants; for farther information on this subject we refer to what we have already said on convalescence.

Although the first indication is easy to fulfil, the second

often presents difficulties ; inflammations producing asthenia of a part of the organism are ordinarily violent or chronic ; and we know that too often both are beyond the resources of therapeutics. However this may be, the debility accompanying irritations does not allow of any other treatment than that proper to destroy the cause keeping it up, as long as the latter is sufficiently intense to be exasperated by tonics ; hence the danger of their employment in gastro-enteritis, under the adynamic form, in chronic gastro-enteritis, &c. : as soon as the contrary takes place, says the author of the *Examen*, the debility furnishes indications which combine with those depending on irritation ; finally, when the latter has ceased, debility becomes the principal disease ; but irritability of the organs exacts careful management in the employment of stimulants. Amongst the last propositions of the *Examen*, are found some very important precepts on the cases in which it is proper to recur to tonics.

Such is the only point of view in which asthenia can be considered ; what we have said on the subject is sufficient to show the clearness shed by the physiological medicine over its theory, and to answer the reproach which has been uttered against the new doctrine, of having studied and known nothing but irritation.

## APPENDIX.

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### MANNER OF KEEPING AND USING LEECHES, &c.

TOPICAL blood-letting, of late so much employed in Europe and some of the larger cities of the United States, is scarcely resorted to at all, and its principles are imperfectly understood, by practitioners of the country and smaller towns—particularly at the South.

This neglect of so important a therapeutic agent, is mainly owing to two circumstances, viz : 1st, ignorance of its real value, and secondly, a want of the information necessary for catching, keeping, and employing leeches. From these considerations, I am induced to give a few details which may not be unacceptable to those of the profession who have not had the facilities for acquiring information on this subject.

Leeches abound in the waters of all parts of the United States, and no where are they more abundant or of better quality than in the Carolinas. An idea has gone abroad, that none but the *Hirudo Medicinalis* is fit for use, and that some of the species are even poisonous. This is incorrect ; *any leech that will bite may be used without fear of danger*. I have used them from several districts of South Carolina, and found them to answer perfectly well. The *Hirudo Medicinalis* has not yet been found in this country.

It is said that the best Spanish leeches will draw an ounce of blood each. Those I have seen will not draw more than half this quantity, and probably not average so much. Our leeches, when of good quality, will not average more than a drachm and a half. Their small size, however, I do not think an objection, but in many respects an advantage. They bite quite as well as the Spanish, *cause much less pain and irritation*, and the bites being smaller *are much less apt*

to be followed by troublesome hemorrhage, which is a frequent consequence of the Spanish leech in delicate females and children. We have only to multiply the number in the proportion of about three to one.

Leeches are found most abundant in still fresh water—as ponds, and meadow streams. They are generally caught by boys who go into the water and muddy it ; the leeches then rise to the surface or fasten on their legs, when they may be taken up and put into a vessel of any kind. They are also sometimes caught by spreading a fresh sheep skin or any other skin on the surface of the water, with the raw side downwards, to which they will attach themselves.

The method of keeping them which I have found to succeed best is the following—Take a *perfectly clean* cask and saw it in the middle, so as to make two tubs, then burn some shavings of wood in them for the purpose of purifying them and charring their internal surface superficially—a hole is then bored in the bottom in order to draw off the water, which should be changed every day or two. Very little water is required ; not more than one or two inches in depth. There should always be put into the tub, two or three clods of marsh grass, with mud attached to it. This is an important direction ; for they never do well without mud and require grass or moss to wipe off the slime which forms on their bodies. If this be neglected, they become sickly.

They are apt to crawl out of the tub if some precaution be not taken to prevent them. This difficulty is easily remedied by the following simple method.—Take a little wet clay and smear the upper part of the tub for about eight or ten inches on the inside. When it becomes dry the leeches will not crawl over it. The tubs should remain uncovered so as to allow air freely—when they are kept too close the leeches become languid, and bite with reluctance.

Leeches are very cleanly animals, and require a great deal of particularity. Any disagreeable odour—even the natural perspiration of the body, is offensive to them. It is therefore necessary that the part on which they are applied should be washed perfectly clean, and be free from hair, otherwise it is often impossible to make them take hold. When they refuse we sometimes succeed by washing the part in hot water and rubbing it with a piece of flannel, so as to draw the blood to the surface. Wetting the part with a little sweetened milk will sometimes answer. Generally



however, they will not bite unless the part be covered with blood.

They should always be taken out of water an hour or two before they are used, in order to accustom them to the air. The best plan of applying them generally, is to put them into a tumbler or tin cup, about one third full of water. Then place the lip of the cup in contact with the part on which you wish them to fasten and tilt it until the water is near running out. They will then crawl up and lay hold. They should be allowed to suck until they become full and drop off, which will be in about half an hour. If they are taken off forcibly, they are apt to be deprived of their teeth. Those which fall off spontaneously, remain possessed of their teeth, and may be used repeatedly.

In order to make them disgorge themselves, they should be put for a few moments into a weak solution of salt in water, or what is better, into porter. The best plan, however, of getting the blood out of them, which I have seen tried, is to make a small incision with a lancet, in the back near the tail, and strip it out with the fingers. Fewer die under this treatment than any other I am acquainted with. They will be fit for use again in a week or ten days, and I have seen the same leeches bite ten or twelve times. If the blood be allowed to remain in them, it will be digested and they will bite again in about a month. But a much greater proportion die than when the blood is abstracted from them.

There may be some difficulty, with persons unaccustomed to their employment, in determining the proper number to be applied, under various circumstances. This difficulty, however, will soon be overcome by a little experience and observation.

In all cases we should look first to the state of the general circulation. When this is strong, the pulse full and hard, a general bleeding should be premised, in order to reduce its force, before topical bleeding is resorted to. If this precaution be not attended to, the topical bleeding instead of proving beneficial, will often aggravate the disease; for while the *vis a tergo* of the large vessels is energetic, little or no impression can be made on the capillaries. The irritation caused by the leech bites or scarifications, will be extended to or reflected sympathetically on the inflamed part, and produce an increased afflux of blood into its vessels, already laboring under superexcitement and engorgement. In this

manner the good effects of the topical depletion will be more than counterbalanced. Rush said there was a blistering point. There is also a point for topical blood-letting in visceral inflammations, and this point must be determined by observation. When the inflammation of any organ or tissue does not produce a marked increase in the activity of the heart and arteries, we may without any preparation resort to topical bleeding at once.

One of the great advantages of cups and leeches is, that they may be used with safety and decided good effect, where the local inflammation continues after the patient is too far reduced to bear bleeding from the arm. In these cases topical blood-letting is the most potent of all our means, and a person who has not been in the habit of witnessing its employment, could scarcely credit the effect often produced by the application of a small number of cups or leeches. Another very important fact, and one insisted on in the text, is the great superiority of capillary over general bleeding in *membranous inflammations*. Venesection, so efficacious in the acute inflammations of *Parenchymatous* organs, seems but partially to reach those of the membranous tissues—those of the mucous membrane of the stomach and intestines, the peritoneum, the meninges, &c. for example; in these cases a small quantity of blood by leeches or cups produces a much better effect than a large quantity from the arm. A great proportion of our fall fevers do not require the lancet, but are always benefitted by leeches to the epigastrium or head, when the stomach or brain is much affected.

I have often been asked the question, *why* the abstraction of blood from one part should produce effects different from those caused by its abstraction from any other part? It is said that the blood moves in a circle and that it is immaterial from what point it is drawn. Those who argue thus have studied very imperfectly the laws by which the circulation is governed, and have yet a great deal to learn with regard to the effects of capillary bleeding. No one can deny the dependence of the capillary on the general circulation to a certain extent; but the most prejudiced mind cannot honestly investigate the subject without allowing to the capillary system laws peculiar to itself. *Facts* satisfactorily establish, that the motion of the blood in the capillaries, is not governed by the *vis a tergo* alone of the heart and arteries.

If we examine with a microscope, a point on the web of a frog's foot, irritated by a drop of concentrated acid, or in any other manner, we see the blood of the surrounding parts flowing to the irritated focus, without any regard to the direct course of the blood from artery to vein. How could this be if the blood moved always in a circle? How could *any* unequal distribution of blood take place if this were the case? There must be a point also at which a portion of the blood escapes from the vascular tubes, else of what use could it be to the economy? How could any interstitial molecular action be operated, as nutrition, decomposition, &c.? There is a point then at which the blood becomes emancipated, to a great extent, from the direction of the heart and arteries, and becomes subject to other forces. What these are we know not: they are inscrutable to our senses. But it is not my intention to enter into this discussion here. No *physiologist*, from Bichat down to the present day, doubts that the capillary system has laws peculiar to itself, and those who choose to investigate the subject may soon be satisfied of it.

Perhaps it may be somewhat difficult to explain satisfactorily the *modus operandi* of capillary bleeding. How, for instance, a few leeches to the epigastrium can relieve a gastritis, when double the quantity of blood from the arm will make no impression on the disease. However difficult it may be to explain the *quo modo*, *the fact is so*, and whoever tries the experiment will be convinced. I have repeatedly seen patients laboring under a termination of blood to the head, with indications of apoplexy, who had been bled from the arm until the pulse at the wrist was almost extinct. Still the carotids beat violently, and there was little or no mitigation of the local determination. Under these circumstances a few leeches or cups behind the ears or neck calmed it almost immediately. These facts hold also in other local determinations.

The number of leeches proper to be applied must be regulated by the strength of the patient, the acuteness of the disease, its seat, &c. By the European writers we see from ten to thirty or forty recommended, but our leeches should be used in much greater profusion. In adults, during the acute stages of violent internal inflammations, such as pleurisy, peritonitis, gastro-enteritis, encephalitis, &c. we should apply from fifty to one hundred, when it is impor-

tant to make a prompt and decided impression. To persons unaccustomed to the employment of these animals, the number I have mentioned may appear extravagant, but I have had ample opportunity during several years attendance on the practice of the Philadelphia Almshouse, (the most extensive hospital in this country,) of being satisfied of the truth of what I assert.

The bleeding from the bites, after the leeches fall off, should be promoted by warm fomentations, in order to overcome, by the depletion, the local irritation produced. This precaution should be particularly attended to when the leeches are applied upon or very near the inflamed part; otherwise the engorgement of the capillaries may be increased, and all the symptoms aggravated. The flow of blood from the bites sometimes continues too long, and it then becomes necessary to employ means calculated to stop it. Generally the bleeding may be stopped by merely binding on a dry towel. If this does not answer, heating the towel very hot and binding it on firmly, will almost always be sufficient. Sometimes, however, the bleeding proves obstinate, and a strong solution of sulphate of copper must be used. Cases have occurred where it was necessary to touch the bleeding bite with caustic, sulphuric acid, or even a heated wire. I have been told that dropping a little melted sealing wax on the bite will certainly prove effectual. Cases, however, are very rare in which any attention is required to stop the flow of blood. I have never seen a case, where *American leeches* were used, in which the bleeding could not be commanded by moderate pressure with a hot towel. On the contrary, the difficulty is generally to get the bites to bleed as freely as we wish.

Here arises a very interesting question and one of great practical importance, viz: what point is to be chosen for capillary bleeding, one near the diseased organ, on the inflamed part itself, or at a distance from it. Authors have differed widely on this subject. Barthez, Vitet and others, have advised us to select the most distant point from the seat of the disease. In affections of the brain, ophthalmia, croup, &c. for example, the leeches should be applied to the thighs or legs, says the latter, &c. This notion is maintained by few physicians of the present day. The practice now is to apply them as near as possible to the inflamed organ, and sometimes even on the inflamed tissue itself. In



this they conform to the precept of Celsus, who says, “ when we draw blood for the purpose of relieving the whole body, we should open a vein in the arm ; but when it is to unload a particular part, we should deplete from the affected part, or from that which is nearest to it.”

The following directions are important, and I think may be depended on :

In inflammations of the gastro-intestinal mucous membrane, leeches or cups when resorted to should be applied to the epigastrium, or whatever point of the abdomen may correspond to the affected part. If the lower bowels be affected, as in dysentery, leeches act best when applied to the anus.

In inflammations of the appendages of the digestive canal, the liver, spleen, pancreas, peritoneum, for example, on the point corresponding to the pain or seat of the disease.

In inflammations of the genito-urinary organs, on the hypogastrium, perineum, anus, thighs, root of the penis, track of urethra, on the scrotum, labia, and even the neck of the uterus, &c.

In otitis, we should place them around the ear and on the lateral parts of the neck ; in croup and the different anginas, on the course of the jugular veins.

Following out these principles we should in *ophthalmia*, place the leeches on the eyelids and temples. Some physicians advise them even to the conjunctiva. Having, however, repeatedly seen *acute ophthalmia* aggravated by applying leeches or cups too near, I have been induced to abandon this plan. When applied too near, the irritation produced by leeches or cups, will, I believe, as often increase as diminish the intensity of the disease—in these cases the leeches or cups should be applied behind the ears or neck. In *chronic ophthalmia* they may be applied to the temples and lids, in subjects who are not very irritable, but after the leeches drop off the bleeding should be kept up by warm fomentations or poultices, in order to allay the irritation produced. In these cases the smallest sized leeches should be used, as they cause very little irritation.

In thoracic inflammations we place them on the point corresponding to the pain.

In erysipelas simple or phlegmonous, in inflammation of the cellular tissue and of the external lymphatic vessels and in cancer, around the inflamed part—so also in rheumatism

and gout. Frequently acute rheumatism and gout depend on gastritis and I have seen in such cases prompt relief of the articular pains from the application of leeches to the *epigastrium*—even after general bleeding had been pushed to the utmost point unavailingly.

In inflammations of the brain and its envelopes, behind the ears, over the jugulars, back of the neck, and when the pain is confined to the anterior part of the head, sometimes on the temples. These directions are of great practical importance. I have very frequently seen leeches and cups on the forehead fail to produce relief from the encephalic symptoms, when a cup or a few leeches, behind each ear, overcame the pain, and local determination of blood immediately. When applied on the forehead, instead of relieving I have seen them aggravate the disease. I remember two instances particularly which occurred in the Philadelphia almshouse. There was in each of these cases a strong termination of blood to the head, and cups were applied to the forehead for the purpose of relieving it—the cups however, had been on but a very short time before violent convulsions supervened. The explanation of these facts appears to me simple enough. When cups or leeches are applied to the forehead, the irritation and suction produced, call the blood to this point and increase the activity of the circulation through the branches of the carotids, and the congestion in the brain must of course be increased. When on the contrary the cups or leeches are applied behind the ears, over the jugulars, or to the back of the neck, the blood is diverted from the brain.

If we wish to establish a hemorrhoidal or menstrual flow, we should apply leeches to the anus or vulva. It is better in such cases to apply a few leeches at a time and apply them frequently; for we want a revulsive as much as a depleting action, and if a few leeches only are applied, the depletion will not be sufficient to overcome entirely the irritating or revulsive action produced by the bites.

It may not be amiss to add a few very general remarks on the comparative effects of leeching and cupping.

When the patient is irritable and the disease acute, leeches are always to be preferred; because they produce much less irritation than cups, and are therefore much less apt to cause sympathetic irritation on other organs. In acute internal inflammations, accompanied by high fever and

great sensibility, I have seen the pain and irritation from cups aggravate all the symptoms.

In inflammations of the abdominal viscera accompanied with fever, leeches are much to be preferred to cups; for there is so much adipose matter beneath the integuments of the abdomen, that in most cases very little blood can be abstracted by the latter—their effect then is more, that of irritation than depletion.

Cups on the contrary are very efficacious in affections of the thoracic viscera. They are here resisted by very little adipose matter and draw blood freely if the scarificator be sharp, *which is always a matter of importance*. In these cases they answer nearly as well as leeches, where the patient is not very irritable. They generally answer very well in affections of the brain, when applied *to the back of the neck or behind the ears*.

As a general rule, leeches are to be preferred in all *acute*, and cups in *chronic* inflammations. For in addition to the depletion, scarified cups produce a pretty powerful revulsive effect and this combination of depletion and revulsion is peculiarly well adapted to the treatment of chronic phlegmasiæ.—*Trans.*





## GLOSSARY.

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*Abnormal.* By abnormal action we mean morbid action, or a deviation from the normal or natural action of a part.

*Asthenia.* Langour of vital action ; debility.

*Atony.* Weakness, flaccidity ; diminution or loss of tonicity.

*Animism.* Doctrine of Stahl, who contended that the soul presided over all the actions of the organism.

*Animist.* A partisan of this system.

*Anæmia.* Want of blood ; a disease in which the blood is not in sufficient quantity to support life, and appears to have lost its color, consistence and exciting qualities.

*Adynamia.* Want of force ; debility, weakness.

*Adynamic fever,* is according to Pinel, characterized by diminution of the cerebral functions, and of the muscular forces ; typhus.

*Ataxia.* Disorder, irregularity ; trouble of animal spirits, of the vital principles, of the functions of the nervous system.

*Ataxic Fever.* Pinel has given this name to the malignant or nervous fever, because it is announce by irregularity in its symptoms.

*Carcinoma.* Cancer.

*Deuteropathia.* A morbid state which is developed under the influence of another disease ; sympathy.

*Diagnosis.* The science which teaches the signs by which one disease may be distinguished from all others.

*Deperdition.* Loss ; a term frequently applied to alvine evacuations.

*Excitation.* Partial or general exaltation of vital action ; increased action of a part ; applied also to the *natural degree of excitement*,

*Encephaloid.* A morbid formation (thought by some to be cancerous) resembling medullary matter.

*Embarras Gastrique.* A shade of gastric irritation, in which there is loss of appetite, bitterness and clamminess of the mouth, tongue white or yellow, sense of uneasiness at the epigastrium, and sometimes pain in this region, with nausea and bilious vomiting: this condition is accompanied with head ache, lassitude and pains in the back and members.

*Etiology.* The part of pathology whose end is the study or knowledge of the causes of diseases.

*Erethysmus.* Increased sensibility and irritability.

*Expectantism.* An expression used of late to designate the mania of *expectation*, shewn by certain physicians, who taking Hippocrates as their model, abandon diseases to the efforts of nature alone.

*Expectation.* To be contented with abandoning diseases, to remove the causes which may produce them, or those which may trammel their march, by taking care not to administer any active remedy, unless some pressing circumstance require it: this is what constitutes the therapeutic method, known under the name of *expectation*.

*Essential Fevers.* Idiopathic fevers; fevers supposed to exist without a local origin.

*Embonpoint.* Good plight of body; fleshiness.

*Excutories.* Artificial ulcerations established for the purpose of revulsion; such as issues, setons, &c. &c.

*Fuliginous.* Sooty; term applied to the black appearance of the tongue in typhus, &c.

*Hypertrophia.* Condition of a part in which its nutrition takes place with great activity, and by this means produces a considerable increase of volume.

*Humorism—Humoralism.* A medical doctrine, in which all diseases are referred to a vitiation of the humors, in their nature, quantity or distribution.

*Irritability.* A quality belonging exclusively to organized, living bodies, which makes certain parts of the body execute, (without the whole *Being* participating in them, or even feeling them,) sudden and more or less remarkable movements, whenever provoked by an exciting cause.

*Irritation.* The state of an organic tissue or of an organ, in which there is an excess of the internal vital movement, manifested ordinarily by the increased activity of the circulation and exaltation of sensibility. Broussais defines irritation, "the morbid superexcitation of vitality." It is defined also, "vital excitation increased to a degree beyond the normal type, peculiar to the subject."

*Inflammation.* State of an organic tissue, accompanied by redness, heat, tumefaction, and pain. Such is the definition of inflammation most generally adopted. Broussais contends that we should

give this name to every local exaltation of the organic movements, sufficiently considerable to disturb the harmony of the functions, and to disorganize the tissue in which it is seated. He has since extended the name of *inflammation* to irritations which do not produce disorganization of the tissues, and to diseases which, before him, had been called, and are still called *fevers*

*Idiosyncrasy.* "A disposition resulting from the greater or less vital energy given to such or such an organ in certain individuals, and which makes them present, either in the actions of these organs, or in the manner which they themselves are affected by external agents, phenomena more or less different from those observed under similar circumstances in most other men." A peculiarity of constitution, in which a person is affected by certain agents, which, if applied to a hundred other persons, would produce no effect.

*Insomnolence.* Inability to sleep; sleeplessness; sleep disturbed by dreams, &c.

*Intraleptic.* The method of using medicines externally by frictions, unctions, &c.

*Lesion.* This name is given to all the morbid changes which may take place in the vitality of the organs, or in the accomplishment of the functions which they are charged with. *By organic lesions*, we mean those in which the structure or organization of a part is altered; a wound, an ulcer, &c. are of this kind; every deviation from the healthy state of a part is a *lesion*.

*Lardaceous.* This name has been given to those tissues of the economy, which having undergone cancerous degeneration, assume a lardy or fatty appearance.

*Melanosis.* Laennec gives this name to accidental morbid productions, homogeneous, slightly humid, of a deep black, opaque, having some analogy with the bronchial glands; at first hard, when they commence to soften, there oozes from them a thin reddish fluid mixed with little black clots; when they are completely softened they are converted into a soft black mass about the consistency of pap.

*Motility.* The faculty of moving.

*Mobility.* Facility of changing place; very great nervous susceptibility, united to a convulsive disposition; excitability very highly developed.

*Modifier.* We designate by this term any external agent, which changes or modifies the actions of the tissues.

*Normal.* By the normal condition or action of a part, we mean its natural or healthy state—when there is a deviation from this, the action is abnormal or morbid.

*Ontologist.* M. Broussais designates by this term, those physicians who have reasoned upon diseases as essences, as distinct *Beings*, existing independently of the affected organs.

**Organism.** The concurrence of actions by which the life of a living body is accomplished; the assemblage of the laws which govern the animal economy. This name is also given to the living body itself—thus the organism and the animal system are synonymous terms.

**Orgasm.** Erection—the state of a tissue or of an organ when the vital action is carried to the highest degree of intensity—irritation.

**Phlegmasia.** Synonyme of inflammation.

**Prodrome.** The time which precedes the invasion of the disease. It is characterized by various phenomena or signs, called *forerunners*, *precursors*, &c.

**Pyretology.** Treatise on fevers.

**Pathology.** The study or knowledge of the organs considered in a state of disease; it teaches the seat and nature of disease.

**Physiology.** The knowledge of the actions executed by the organs or apparatus of organs in a *state of health*: pathology examines these actions *when diseased*.

**Physiological Doctrine—Physiological School.** Titles assumed by Broussais and his sect for their school and doctrine.

**Prognosis.** Judgement formed by the physician on the march and termination which a disease is to take.

**Prognostic.** We name thus the signs from which we foresee what will take place, fortunate or unfortunate, in the course of a disease; and what will be its issue.

**Phlogosis.** Inflammation.

**Ptisan.** This name is given to medicated liquids, having water as a vehicle and in which the medicinal substance is so diluted that they can be drunk in great abundance; most *ptisans* are infusions or decoctions of light vegetables, fruits, farinaceous articles, &c. sweetened and flavoured.

**Repercussive.** A name given to any medicinal agent, which, when applied on a part towards which the fluids flow, by the effect of an irritation direct or sympathetic, produces a reflux of these fluids towards the interior.

**Resolvents—Resolutives.** A name given to those remedies which favour the resolution of an engorged or tumified part.

**Ramollissement.** Softening of a tissue; supposed to be the result of inflammation.

**Revulsive.** A name given to remedies employed to avert an irritation from the organ on which it has fixed its seat.

**Revulsion.** Is the spontaneous or artificial augmentation of the organic action of a system, of a portion of a system, or of an organ; producing a cessation of that existing in other parts; a blister on the nape of the neck relieves an inflamed eye by revulsion.



*Sthenia.* Excess of tone; rigidity of the tissues; excess of force of organic action; exaltation of vital action.

*Septenary.* Space of seven days.

*Sedative.* A name given to all pharmaceutic agents which moderate or lower the organic action.

*Sedation.* The action of sedative remedies.

*Saburra.* Crude matters, the residue of alimentary substances which has surmounted the digestive action; altered humours, in a word, morbid matters which were supposed to be amassed in the stomach and intestines, and to which was attributed the production of a crowd of diseases.

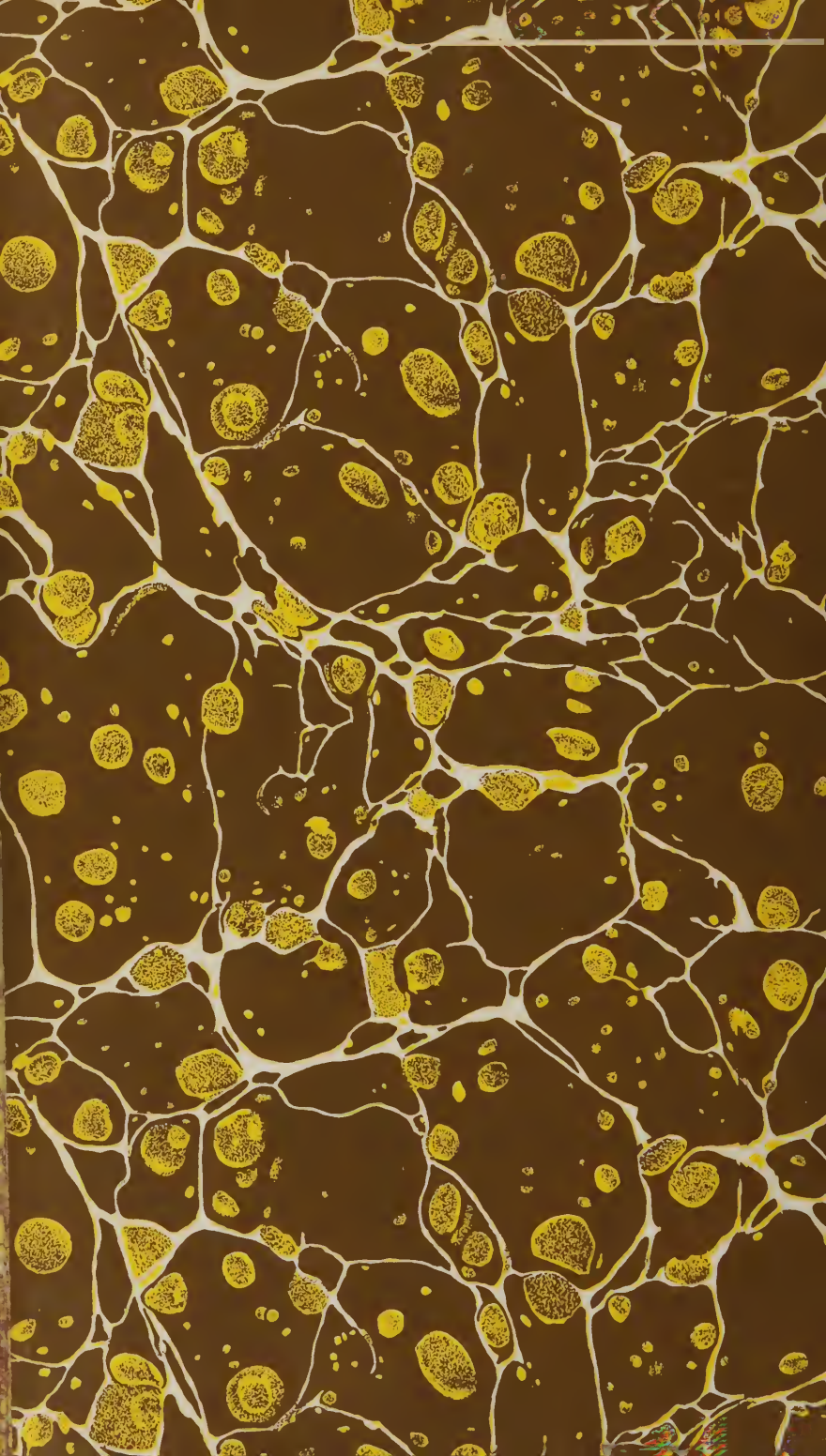
*Semeiosis—Semiotice—Semeiology.* That part of pathology which treats of the signs of disease.

*Sordes.* Dirt, filth, faeces: applied to the foul accumulations about the mouth, and also matters in the stomach.

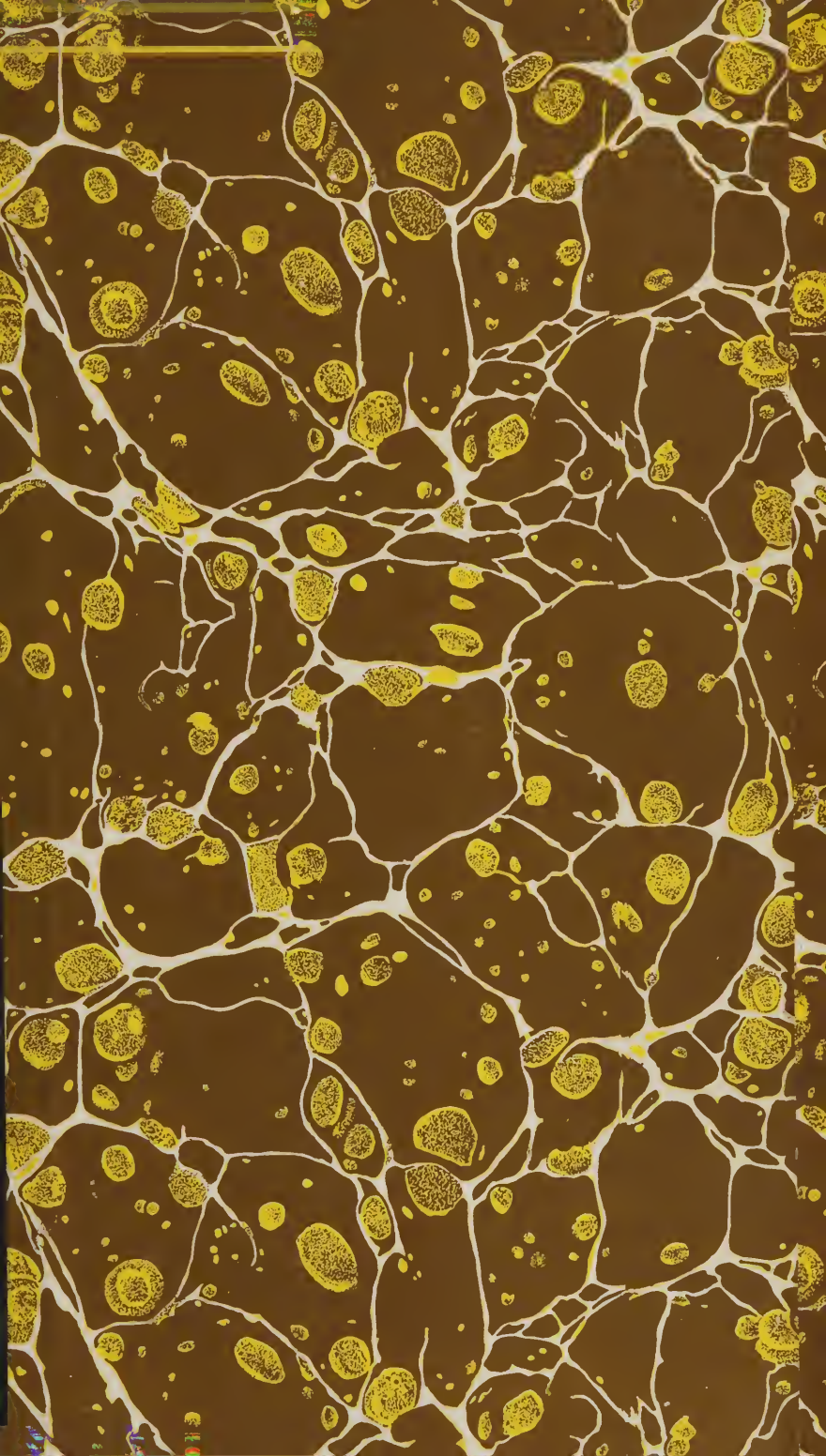
N. B. I have principally taken these definitions from the *Dictionnaire des Termes*.—*Trans.*











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